

SEALED RELAYS

GENERAL  ELECTRIC

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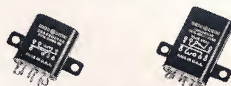
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HOW TO USE THIS CATALOG

For complete information on the relay you want, fold out the General Specifications Table on page 3 and turn to the section that describes the desired relay type (3SAV, 3SAM, etc). On these pages you will find all the information you need: Features, Description, Coil Data, Header Forms, Mounting Forms, Connection Diagrams, and Specifications.

Order your relays from your nearest General Electric Sales Office or Distributor, following the directions below.

ORDERING DIRECTIONS

Order by catalog number, deriving it as follows:

Select

- 1 Relay type (3SAV, 3SAM, etc)
- 2 Calibration code number from coil table (voltage, Code: 5; current, Code: 6)
- 3 Mounting code numbers from applicable Mounting Forms section
- 4 Header code number from Header section
- 5 Coil resistance code letter from coil table
- 6 Sensitivity code number from selections offered

EXAMPLE: Assume desired relay is: (1) Type 3SAF (pages 8-9), (2) voltage calibrated, (3) mounted by two-hole end brackets with captive screws, (4) 0.16 in. solder hook terminals, (5) 600-ohm coil, (6) 170 MW sensitivity.

CATALOG NUMBER WOULD BE—

1 Relay type: 3SAF
2 Voltage calibration code: 5
3 Mounting code: 30
4 Header code: 2
5 Coil resistance code: H
6 Sensitivity code: 3

3SAF 5 30 2 H 3

NOTE: Relays specified by catalog numbers (per above directions) are general use items controlled by catalog specifications. Relays to be controlled by customer drawings or relays having requirements not covered in this catalog will be assigned special catalog numbers upon request to the factory.

Definition of Terms and Performance Criteria

Sensitivity: Nominal power required to operate relay at 25C.

Operate, Release (Reset), and Bounce Times: Values listed apply when measured per MIL-R-5757D with two times maximum operate coil voltage or current at 25C ambient.

Vibration and Shock: Allowable contact chatter is 10 microseconds maximum.

Shock { 100g, 11 ms—1/2 sine wave
50g, 11 ms—MIL-STD-202, Method 205, Test Condition C
50g, 6 ms—MIL-STD-202, Method 202

Contact Resistance: Measured at relay terminals within 1/8 inch of header. Test signal 6v d-c, 100 ma maximum, contacts "switched dry."

Dielectric Strength: MIL-STD-202, Method 301, 1 ma maximum leakage.

Insulation Resistance: Test potential at 500v per MIL-STD-202, Method 302, Test Condition B.

Operate Voltage or Current: Measured at 25C coil temperature and after establishing residual magnetism.

Specifications

RATINGS AND CHARACTERISTICS COMMON TO ALL RELAYS

Ambient temperature rating: -65 C to +125 C

Contact resistance: 0.050 ohms maximum; 0.1 ohms maximum during and after life

Contact overload: Exceeds requirements of MIL-R-5757D and MIL-R-39016

Hermetic seal: Seal test by Radiflo† System

† Trademark of Consolidated Electrodynamics Corp.

Coil data changes at temperature extremes (Use following ratios for operate and release characteristics at temperature extremes)		
To Obtain:	Voltage Calibrated	Current Calibrated
Max Operate At 125 C coil temp, multiply 25 C max operate by:	1.35	1.0
At 125 C ambient temp, hot coil, multiply 25 C max operate by:	1.47	1.0
Min Release At -65 C coil temp, multiply 25 C min release by:	0.59	0.9

Contact Arrangement	Operate Sensitivity (milliwatts)	Contact Life (operations)		Max Operate Time (2) (milliseconds)	Max Operate Bounce Time (milliseconds)	Max Release Time (2) (milliseconds)	Max Release Bounce Time (milliseconds)	Dielectric Strength (3) Across Contact Gaps (RMS volts)	Min Insulation Resist. once Contact Gaps Close (4)	Shock	Vibration (5)	Max Weight (ounces)	Relay Type
		Resistive Current Rating at 28 VDC at 17.5 VAC (1)	Low Level										
2PDT	260MW	10 ⁵ at 2A dc at 1A ac	10 ⁶	4	1	4	1	500V	100 MEG.	50G 11MS	30G 55 to 3000 CPS	0.35	3SAV Half-size Grid Space Pages 4, 5
2PDT	50MW single coil	10 ⁵ at 2A dc at 1A ac	2 × 10 ⁶	5	1	5 (reset)	1 (reset)	700V	1000 MEG.	100G 11MS	30G 55 to 3000 CPS	0.75	3SAM Magnetic Latching Grid Space Pages 6, 7
	75MW dual coil												
2PDT	300MW	10 ⁵ at 3A dc at 2A ac	2 × 10 ⁶	5	1	4	1	700V	500 MEG.	50G 11MS	30G 55 to 3000 CPS	0.65	3SAF General Purpose Grid Space Pages 8, 9
	265MW	10 ⁵ at 2A dc at 2A ac		5				550V					
	170MW	10 ⁵ at 1A dc at 1A ac		6				500V					
SPDT	50MW	10 ⁵ at 2A dc at 1A ac	2 × 10 ⁶	8	1	5	1	500V	100 MEG.	50G 11MS	25G 55 to 2500 CPS	0.7	3SBF Sensitive Grid Space Pages 10, 11
2PDT	75MW												
SPDT	25MW	10 ⁵ at 2A dc at 1A ac	2 × 10 ⁶	10	1	5	1	500V	100 MEG.	50G 11MS	20G 55 to 2500 CPS	1.05	3SAT Extra-sensitive Grid Space Pages 12, 13
2PDT	40MW												
2PDT	330MW	10 ⁵ at 2A dc at 2A ac	10 ⁶	5	1	5	1	700V	500 MEG.	50G 11MS	20G 55 to 2000 CPS	0.60	3SAE Crystal Can Pages 14, 15
	200MW										55 to 3000 CPS	0.75	
4PDT	400MW	4 × 10 ⁵ at 1A dc at 0.5A ac	2 × 10 ⁶	6	1	5	1.5	600V	1000 MEG.	50G 11MS	30G 55 to 3000 CPS	1.2	3SAH Four Pole Grid Space Pages 16, 17,
		2 × 10 ⁵ at 2A dc at 1A ac									55 to 3000 CPS		
SPDT	250MW	10 ⁵ at 1A dc at 0.5A ac	10 ⁶	1.5	0.6	3.5	3.5	500V	100 MEG. *	50G 11MS	30G 55 to 3000 CPS	0.15	3SAK Unimite Pages 18, 19
2PDT	350MW	10 ⁵ at 5A dc at 5A ac	10 ⁸	25	2	12	6	1500V	1000 MEG.	50G 6MS	5G 55 to 500 CPS	4.5	3SAA Miniature Pages 20, 21
4PDT	600MW					8	—						
2PST	600MW	10 ⁵ at 15A dc at 15A ac				8	—						
SPST	600MW	10 ⁵ at 20A dc at 20A ac				8	—						

* 10 meg minimum across open contacts at 125 C.

(1) Single-phase load, case not grounded.

(2) Including contact bounce.

(3) Dielectric strength: 1000v rms at sea level (except across contact gaps); 350v rms at 70,000 ft and above.

(4) Insulation resistance, 1000 megohms over temperature range except coil to case at 125 C.

(5) Constant amplitude starting at 10 cps with crossover at 55 cps. Refer to "Mounting Forms" sections for derating some forms.

(6) Includes 0.15 oz for long leads and mounting brackets.

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* Value
varies

Half-size, grid space, micro-miniature relays

TYPE 3SAV

FEATURES

- radiation-hardened types available
- enclosure electron-beam welded to header
- welded seal hole
- withstands 30g vibration
- bifurcated contact tips
- balanced armature and sturdy suspension system

DESCRIPTION

The new space-saving General Electric half-size relay meets modern application needs with top performance in critical environments.

For spacecraft

The relay is available radiation-hardened without Fluoro-carbon insulating materials.

The enclosure-to-header seal is made using the latest welding technique and equipment, the electron-beam welder.

The result is a clean weld inside and outside the relay and a strong, permanent seal. With the electron-beam technique, welding takes place close to the header, greatly shrinking the flange size necessary in arc welding. The resultant space saved permits increased coil and magnet size and adequate spacing for dielectric strength.

The final seal hole through which the relay is evacuated and charged is also welded. No solder or flux is used in assembly.

Contacts are bifurcated to further minimize the already rare random miss.

Mechanical life is at least 10 million operations and high-temperature insulation promotes long thermal life.

For missiles and aircraft

Superior environmental performance is achieved by means of high contact forces, outboard actuation of the movable contact, balanced armature, and closely held armature suspension system tolerances.

The relay is designed to withstand 30g vibration and 50g shock.

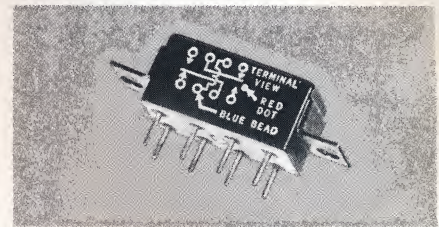
Silver alloy contacts handle 2 amps d-c for 100,000 operations with uniformly low contact resistance and no evidence of sticking or welding.

For logic and sensing-circuit switching

Logic switching and sensing-circuit switching applications in particular require absolute fidelity of contact operation. Even the rare occurrence of a high-resistance contact is objectionable or unacceptable.

Materials, especially insulators, in the Type 3SAV relay are carefully selected and processed to help eliminate films and particles which can cause open or high-resistance contacts. As further assurance of excellent fidelity, redundancy in the form of bifurcated stationary contact tips (Fig. 1) is provided.

Long mechanical life (10,000,000 operations plus), high-speed operation (4 milliseconds max), and greatly compressed



bounce are other important characteristics of the half-size relay in logic switching.

Additionally, it has remarkably good thermo-electric characteristics. A typical set of contacts measures less than 5 microvolts with coil energized and stabilized.

For low-level switching

Excellent performance in switching low-level loads (microamps and millivolts) results primarily from cleanliness and mechanical longevity. Cleanliness is accomplished through virtual elimination of particulate matter.

In summation, the Type 3SAV relay handles low-level switching jobs well because:

1. Assembly occurs in Clean Rooms where all operations are performed under positive-pressure, dust-eliminating enclosures.
2. Bifurcated stationary contacts provide redundancy in each switching circuit.
3. The welded seal means no solder spatter or flux particles.
4. Contact forces are high; surfaces are clean and have never been arced.
5. The relay is designed and materials are selected with the aim of minimizing wear products.

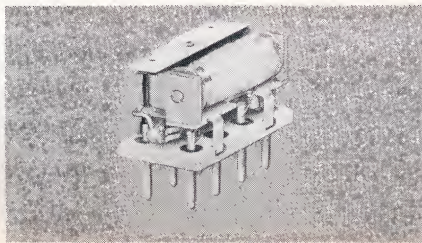


Fig. 1

COIL TABLE (ALL VALUES DC)*

260 MW sensitivity CODE: 1

Coil Code Letter	Coil Resistance at 25C (ohms)	Voltage Calibrated, CODE: 5				Current Calibrated, CODE: 6			
		Suggested Source Volts†	Maximum Operate Volts at 25C	Release Voltage Range at 25C		Maximum Continuous Current at 125C (MA)	Maximum Operate Current at 25C (MA)	Release Current Range at 25C (MA)	
				Max	Min			Max	Min
A	47 ± 10 %	4.8-7	3.2	2.0	0.35	95.0	68.0	41.5	7.4
B	75 ± 10 %	6.1-9	4.1	2.5	0.4	77.0	55.0	33.0	5.3
C	120 ± 10 %	7.7-12	5.2	3.2	0.5	64.0	43.5	26.0	4.1
D	180 ± 10 %	9.5-15	6.4	4.0	0.7	53.5	35.5	22.0	3.8
E	310 ± 10 %	12.5-20	8.2	5.0	0.9	41.5	26.5	16.0	2.9
F	440 ± 10 %	15.0-23	9.9	6.0	1.1	33.5	22.5	13.5	2.5
H	700 ± 10 %	20.0-30	13.5	8.0	1.5	27.5	19.5	11.5	2.1
K	1030 ± 10 %	24.0-35	16.0	9.6	1.8	22.0	15.5	9.3	1.7
L	1620 ± 10 %	30.0-44	20.0	12.0	2.2	17.5	12.5	7.5	1.3
M	2640 ± 10 %	39.0-56	26.0	15.5	2.9	13.5	10.0	6.0	1.1

* Values listed are Factory test and inspection values. User should allow for meter variations.

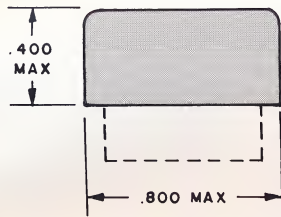
† Applicable over the operating temperature range in circulating air.

Mounting forms

ALL DIMENSIONS IN INCHES

Tolerances
(Unless otherwise specified)

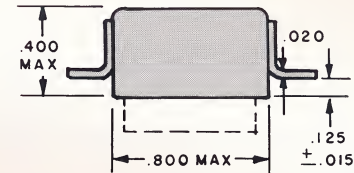
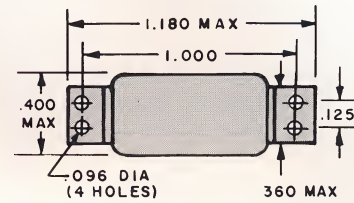
Hundredths	± 0.020
Thousandths	± 0.005



No mount

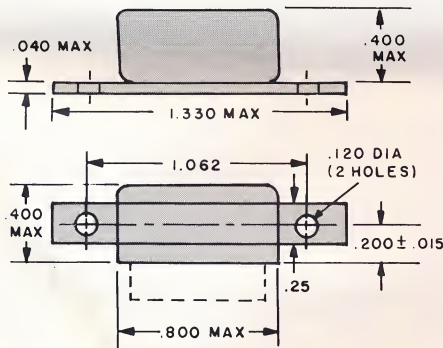
Mounting Code	Vibration*
00	30g

* Assumes relay held securely by potting or other means.



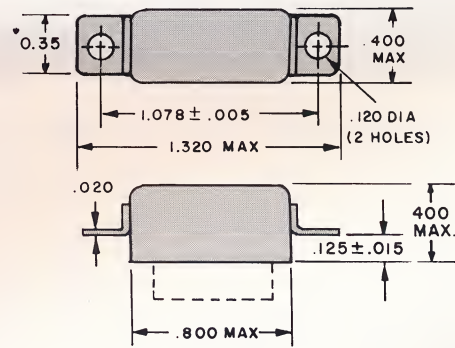
Diagonal two-hole end bracket

Mounting Code	Vibration
01	25g



Two-hole side bracket

Mounting Code	Vibration
04	25g

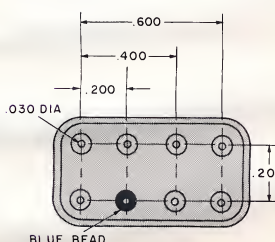
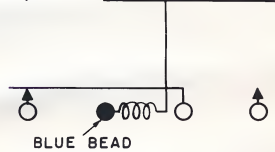


Two-hole end bracket

Mounting Code	Vibration
13	25g

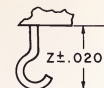
HEADERS

CONNECTION DIAGRAM

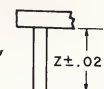


Type	Z Dim.	Header Code
Solder hook	0.16	2
Straight pin (socket type)	0.19	4
Straight pin (PCB type)	0.25	5
Straight pin	2.99	8
Tapered pin	2.95	9

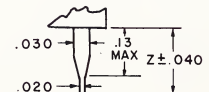
CODE: 2



CODES: 4, 5, 8



CODE: 9



Magnetic-latching, grid space, micro-miniature relays

TYPE 3SAM

FEATURES

- All-welded high reliability construction and enclosure
- Exclusive "matched-action" armature and contact design gives positive follow-through; no hang-up on low-power pulses
- 50-milliwatt operate sensitivity for single coil, 75 milliwatts for dual coil
- Capable of 0.6-watt dissipation per coil at 125 C ambient
- All relays suitable for low-level or power switching

DESCRIPTION

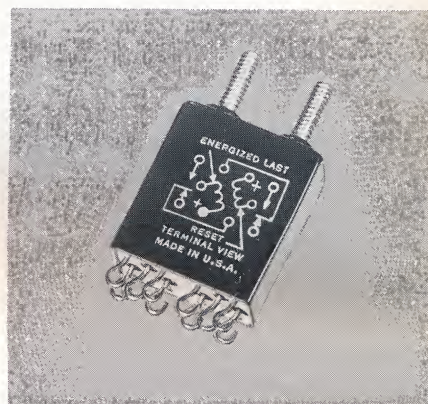
General Electric's Type 3SAM micro-miniature relays are magnetically latched for operation from short power pulses. Both single- and dual-coil units are offered in two-pole, double-throw structures rated at two amperes at 28 volts d-c.

A unique contact and armature structural design assures positive follow-through and snap-action closure on low-

power pulses. The possibility of hang-up or sluggish action is eliminated by proper matching of the electro-magnetic forces to the armature and contact load. Pull force is well in excess of load during the entire transfer process, even at minimum operate power.

The Type 3SAM also incorporates General Electric's unique inert arc-welding closure process. No solder or flux is used to join header to enclosure, contacts to pins, or coil to pins. Thus, the possibility of flux contamination, or solder splatter is eliminated.

Type 3SAM latching relays are furnished in the standard grid-spaced configuration with terminations on 0.2-inch and 0.1-inch centers. High holding forces, augmented by a permanent magnet, provide high vibration and shock immunity—for example, no contact opening under 30g vibration to 3000 cps or 100g shock. All relays are designed and processed for either power or low-level switching.



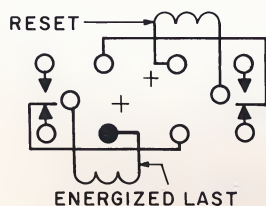
DUAL-COIL VARIATIONS

The standard dual-coil relay is furnished with a symmetrical terminal connection arrangement (header codes: 4, 5, 6). That is, the relay can be turned end for end without changing the location of the positive coil terminals. All dual-coil types are also available with a non-symmetrical terminal connection arrangement (header codes: 7, 8, 9).

SYMMETRICAL

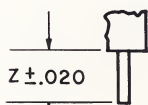
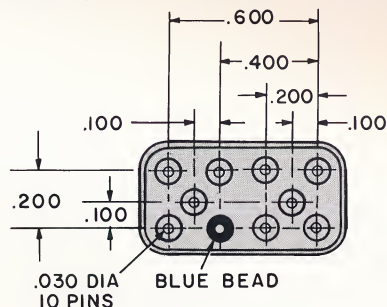
CONNECTION DIAGRAM

(Terminal View)

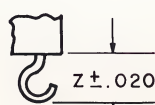


HEADERS

(CODES: 4, 5, 6)



CODES: 5, 6



CODE: 4

DUAL COIL TYPE

COIL TABLE (ALL VALUES DC)

75 MW sensitivity CODE: 2

Coil Code Letter	Current Calibrated, Code: 6		
	Coil Resistance @ 25 C For Each Coil (Ohms)	Max † Operate Current For Each Coil (ma)	Suggested Source Voltage For Each Coil †
A	8.2 ± 10%	95.8	1.5-2.6
B	20 ± 10%	61.2	2.3-4.1
C	48 ± 10%	39.5	3.6-6.3
D	82 ± 10%	30.2	4.7-8.3
E	130 ± 10%	24.0	6.0-10.0
F	200 ± 10%	19.4	7.4-13.0
H	300 ± 10%	15.8	9.0-16.0
K	480 ± 10%	12.5	12.0-20.0
L	675 ± 10%	10.6	14.0-24.0
M	975 ± 10%	8.8	16.0-29.0
N	1500 ± 15%	7.1	21.0-35.0
P	2400 ± 15%	5.6	27.0-44.0
R	4100 ± 20%	4.3	37.0-55.0

† Initial or inspection value. Allow 20% increase in value of maximum pickup during rated life.

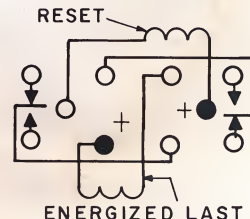
† Applicable over the operating temperature range in circulating air.

Type	Z Dim.	Header Code
Solder hook	0.16	4 or 7
Straight pin (socket-type)	0.19	5 or 8
Straight pin	2.99	6 or 9

NON-SYMMETRICAL

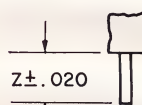
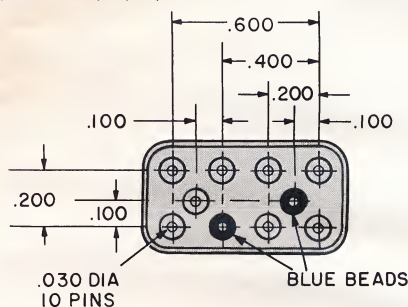
CONNECTION DIAGRAM

(Terminal View)

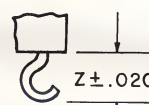


HEADERS

(CODES: 7, 8, 9)



CODES: 8, 9



CODE: 7

Mounting forms

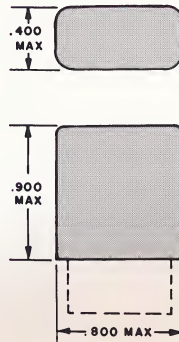
FOR RELAY TYPES 3SAM, 3SAF, 3SBF
(See pages 9 and 11 for other mounting forms)

No mount

Mounting Code	Vibration*†
00	30g

* Assumes relay securely held by potting or other means.

† Derate 3SBF relays 5g's.



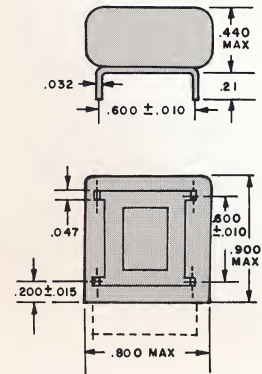
ALL DIMENSIONS IN INCHES

Tolerances (unless otherwise specified)	
Hundredths	±0.020
Thousandths	±0.005

Four-lug centipede mount

Mounting Code	Vibration†
50	30g

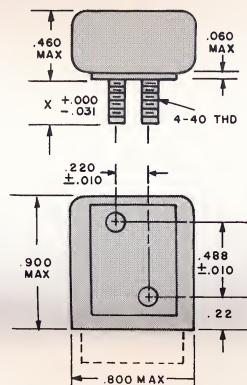
† Derate 3SBF relays 5g's.



Side studs

Mounting Code	X Dim.	Vibration†
07	0.250	30g
08	0.375	30g

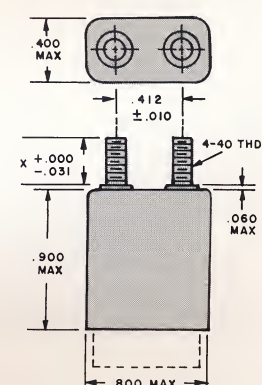
† Derate 3SBF relays 5g's.



Top studs

Mounting Code	X Dim.	Vibration†
10	0.250	30g
11	0.375	30g

† Derate 3SBF relays 10g's.



SINGLE COIL TYPE

COIL TABLE (ALL VALUES DC)

50 MW sensitivity CODE: 1

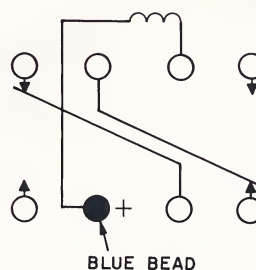
Coil Code Letter	Current Calibrated, CODE: 6		
	Coil Resistance @25C (Ohms)	Max Operate and Reset Current (MA) ‡	Suggested Source Voltage†
A	16.4 ± 10%	55.2	1.8-4.8
B	40 ± 10%	35.3	2.7-7.5
C	96 ± 10%	22.8	4.2-11.0
D	164 ± 10%	17.4	5.5-15.0
E	260 ± 10%	13.9	7.0-19.0
F	400 ± 10%	11.2	8.5-23.0
H	600 ± 10%	9.2	11.0-29.0
K	960 ± 10%	7.2	13.0-37.0
L	1350 ± 10%	6.1	16.0-43.0
M	1950 ± 10%	5.1	19.0-52.0
N	3000 ± 15%	4.1	25.0-64.0
P	4800 ± 15%	3.3	32.0-81.0
R	8200 ± 20%	2.5	43.0-99.0

† Applicable over the operating temperature range in circulating air.

‡ Initial or inspection value. Allow 20% increase in value of maximum operate and reset during rated life.

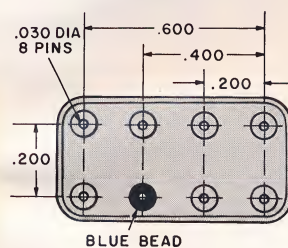
CONNECTION DIAGRAM

(Terminal View)
(+ on blue bead closes as shown)

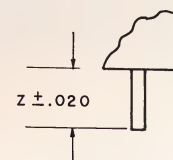


HEADERS

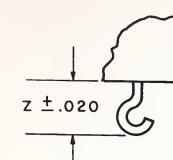
(CODES: 1, 2, 3)



Type	Z Dim.	Header Code
Solder hook	0.16	1
Straight pin (socket type)	0.19	2
Straight pin	2.99	3



CODES: 2, 3



CODE: 1

General purpose, grid space, micro-miniature relays

TYPE 3SAF

FEATURES

- Welded construction
- 30g to 3000 cps vibration
- Three sensitivity options

DESCRIPTION

No solder or flux is used in the assembly of this relay, thus eliminating a major source of contamination.

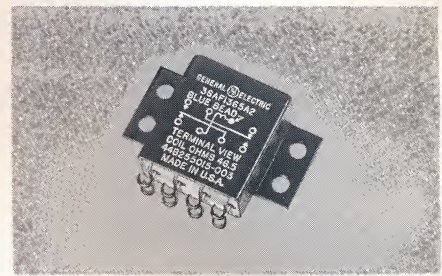
Before sealing, each relay assembly is processed with a high temperature vacuum degas cycle and three cleaning cycles.

Bearing and armature suspension assures exceptional stability of operation throughout ambient range. Perfect alignment, through precise, automatic assembly, offers friction-free operation. The unique armature return-spring, also a residual shim, gives snap-action return.

SENSITIVITY OPTIONS

265 MW Sensitivity CODE: 2

1. Choose desired coil characteristics from table.
2. Multiply values of operating characteristics for coil chosen from table by 0.93 to obtain data for 265 MW relay.



Note: Suggested source voltage for voltage forms and max continuous current for current forms do not change. The 0.93 factor is not applied for these values.

Example: A 600-ohm, voltage calibrated, 265 MW relay is desired.

From Coil table:

Suggested Source voltage—20 to 33
 Max Operate Volts—13.5 (0.93) = 12.6
 Max Release Volts—8.5 (0.93) = 7.9
 Min Release Volts—2.7 (0.93) = 2.5

170 MW Sensitivity CODE: 3

1. Follow same procedure described for 265 MW sensitivity, except use multiplier of 0.75.

Example: A 600-ohm, current calibrated 170 MW relay is desired.

From Coil table:

Max Cont. Current—35.5 MA
 Max Operate Current—22.5 (0.75) = 16.9 MA

Release Current Max.—14.0 (0.75) = 10.5 MA

Release Current Min—4.5 (0.75) = 3.4 MA

COIL TABLE (ALL VALUES DC)*

300 MW sensitivity CODE: 1 (see other sensitivity options)

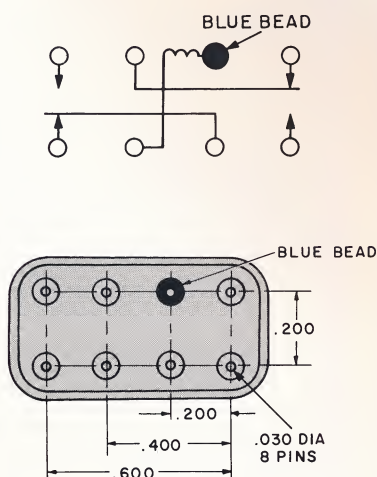
Coil Code Letter	Coil Resistance at 25 C (Ohms)	Voltage Calibrated, CODE: 5				Current Calibrated, CODE: 6			
		Suggested Source Volts†	Max. Operate Volts at 25 C	Release Voltage Range at 25 C		Max. Cont. Current at 125 C (MA)	Max. Operate Current at 25 C (MA)	Release Current Range at 25 C (MA)	
				Max.	Min.			Max.	Min.
A	30 ±10%	4.6–7.4	3.1	2.0	0.62	158.0	103.0	65.0	20.6
B	46 ±10%	5.6–9.2	3.8	2.4	0.76	128.0	83.0	52.0	16.5
C	73 ±10%	7.0–11.5	4.8	3.0	0.96	103.0	66.0	41.0	13.0
D	125 ±10%	9.3–15.0	6.3	4.0	1.2	77.5	50.0	31.5	10.0
E	200 ±10%	12.0–19.0	8.0	5.1	1.6	61.5	40.0	25.0	8.0
F	310 ±10%	14.6–24.0	9.8	6.2	1.9	49.5	31.5	20.0	6.3
H	600 ±10%	20.0–33.0	13.5	8.5	2.7	35.5	22.5	14.0	4.5
K	675 ±10%	20.0–35.0	14.0	8.8	2.8	33.5	21.0	13.0	4.1
L	768 ±10%	23.0–37.0	16.0	10.0	3.2	31.5	21.0	13.0	4.0
M	1078 ±10%	28.0–45.0	19.0	12.0	3.8	26.5	17.5	11.0	3.5
N	1600 ±15%	35.0–50.0	24.0	15.0	4.7	20.0	15.0	9.4	2.9
P	2480 ±15%	45.0–62.0	30.0	19.0	6.0	16.3	12.0	7.7	2.4
R	5000 ±20%	59.0–80.0	40.0	25.0	8.0	10.5	8.0	5.0	1.6
S	7040 ±20%	79.0–95.0	53.5	33.5	10.5	8.8	7.6	4.8	1.5
T	10000 ±20%	94.0–114.0	63.0	39.5	12.5	7.4	6.3	4.0	1.2

* Values are factory test and inspection values. User should allow for meter variations.

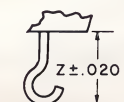
† Applicable over the operating temperature range in circulating air.

HEADERS

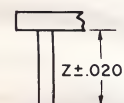
CONNECTION DIAGRAM



Type	Z Dim.	Header Code
Solder hook	0.16	2
Solder hook	0.19	3
Straight pin (socket type)	0.19	4
Straight pin (PCB type)	0.25	5
Straight pin	1.00	6
Straight pin	1.50	7
Straight pin	2.99	8
Tapered pin	2.95	9



CODES: 2, 3



CODES: 4, 5, 6, 7, 8



CODE: 9

Mounting forms

FOR RELAY TYPES 3SAF, 3SAM, 3SBF
(See pages 7 and 11 for other
mounting forms)

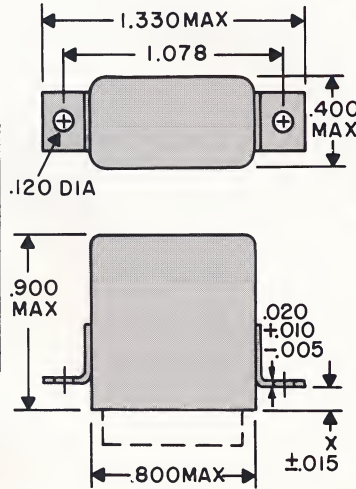
ALL DIMENSIONS IN INCHES

Tolerances (unless otherwise specified)	
Hundredths	± 0.020
Thousandths	± 0.005

Two-hole end bracket

Mounting Code	X Dim.	Vibration†
13	0.125	20g
14	0.250	20g
15	0.450	25g

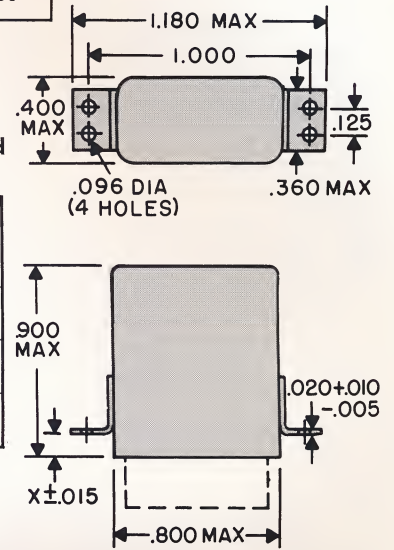
† Derate 3SBF relays 5g's.



Diagonal two-hole end bracket

Mounting Code	X Dim.	Vibration†
01	0.125	20g
02	0.250	20g
03	0.450	25g

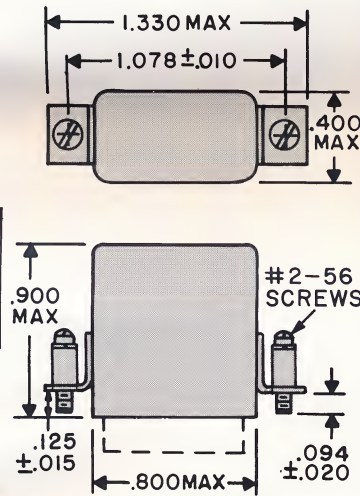
† Derate 3SBF relays 5g's.



Two-hole end brackets with captive screws

Mounting Code	Vibration†
30	20g

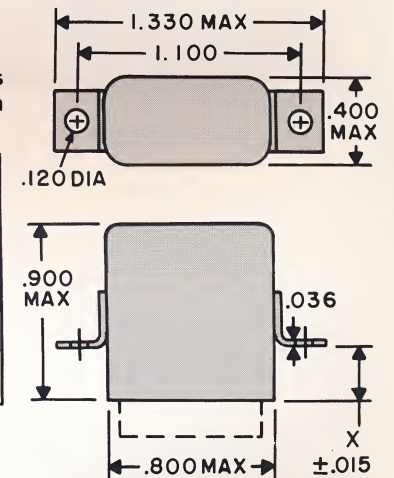
† Derate 3SBF relays 5g's.



Two-hole end brackets 1.1 in. centers, high vibration

Mounting Code	X Dim.	Vibration†
16	0.125	30g
17	0.250	30g
18	0.450	30g

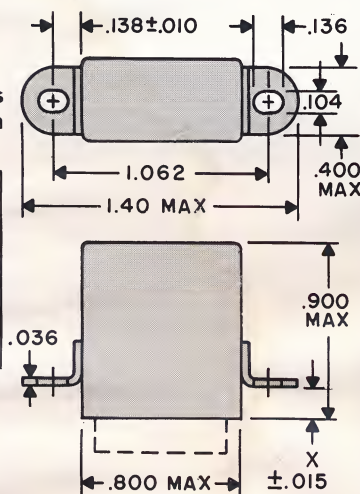
† Derate 3SBF relays 5g's.



Two-hole end brackets 1.062 in. centers, high vibration

Mounting Code	X Dim.	Vibration†
19	0.125	30g
20	0.312	30g

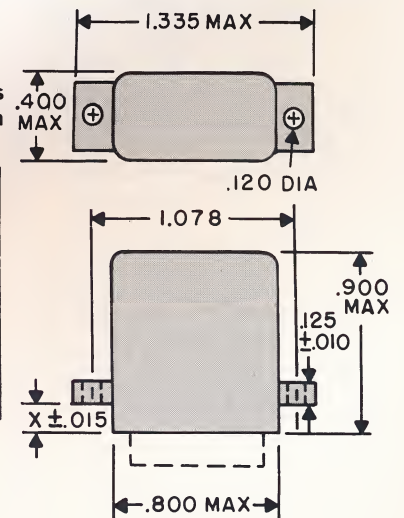
† Derate 3SBF relays 5g's.



Two-hole end lugs 1.078 in. centers, high vibration

Mounting Code	X Dim.	Vibration†
22	0.125	30g
23	0.250	30g
24	0.450	30g

† Derate 3SBF relays 5g's.



Sensitive, grid space, micro-miniature relays

TYPE 3SBF

FEATURES

- 75-milliwatt operate sensitivity for double-pole units, 50-milliwatt for single-pole
- all-welded construction including enclosure-to-header seal
- power or low-level switching capability
- available radiation hardened

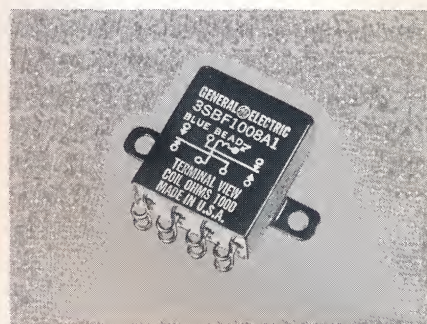
DESCRIPTION

General Electric Type 3SBF, micro-miniature relays are designed for applications that restrict coil operating power but require performance equal to or

better than that of relays with 250 milliwatts or more sensitivity.

Power requirements for the Type 3SBF series are only 50 milliwatts maximum at 25 C for single-pole units, and 75 milliwatts maximum at 25 C for double-pole units.

Optimum design of magnet, contact structure, and return-spring system provides these highly sensitive relays with their superior operating characteristics. And, all-welded construction, including the enclosure-to-header seal, plus General Electric's proven reputation for manufacturing only quality, highly reliable relays mean you get further assurance



of top performance from the new Type 3SBF relay line.

COIL TABLE (ALL VALUES D-C)*

Voltage Calibrated CODE: 5

Coil Code Letter	Coil Resistance Ohms at 25 C	2PDT 75MW Sensitivity, CODE: 1				SPDT 50MW Sensitivity, CODE: 2			
		Suggested Source Volts†	Max Operate Volts at 25 C	Release Volts at 25 C		Suggested Source Volts†	Max Operate Volts at 25 C	Release Volts at 25 C	
				Max	Min			Max	Min
A	20 ± 10%	2.1-4.9	1.25	0.79	0.12	1.7-4.9	1.0	0.65	0.1
B	30 ± 10%	2.5-6.0	1.50	0.95	0.15	2.2-6.0	1.2	0.78	0.12
C	50 ± 10%	3.2-7.8	1.95	1.23	0.20	2.7-7.8	1.6	1.1	0.16
D	80 ± 10%	4.0-9.8	2.45	1.55	0.25	3.4-9.8	2.0	1.3	0.20
E	120 ± 10%	4.9-12.0	3.0	1.9	0.30	4.2-12.0	2.5	1.6	0.25
F	200 ± 10%	6.4-15.5	3.9	2.5	0.39	5.4-15.5	3.2	2.1	0.32
H	350 ± 10%	8.4-20.5	5.1	3.2	0.51	7.1-20.5	4.2	2.7	0.42
K	600 ± 10%	11.0-27.0	6.7	4.2	0.67	9.3-27.0	5.5	3.6	0.55
L	800 ± 10%	12.7-31.0	7.8	4.9	0.78	10.6-31.0	6.3	4.1	0.63
M	1000 ± 10%	14.5-35.0	8.7	5.5	0.87	12.0-35.0	7.1	4.6	0.71
N	1350 ± 10%	16.5-40.0	10.0	6.3	1.0	13.8-40.0	8.2	5.3	0.82
P	1950 ± 10%	20.0-48.5	12.1	7.6	1.2	17.0-48.5	10.0	6.5	1.0
R	3000 ± 10%	24.5-60.0	15.0	9.5	1.5	20.5-60.0	12.2	8.0	1.2
S	4800 ± 10%	31.0-76.0	19.0	12.0	1.9	26.0-76.0	15.5	10.0	1.5
T	8000 ± 10%	41.0-98.0	25.0	16.0	2.5	33.6-98.0	20.0	13.0	2.0
V	20700 ± 15%	65.0-158.0	40.0	25.0	4.0	55.0-158.0	32.7	21.0	3.3

* Values listed are factory test and inspection values. User should allow for meter variations.

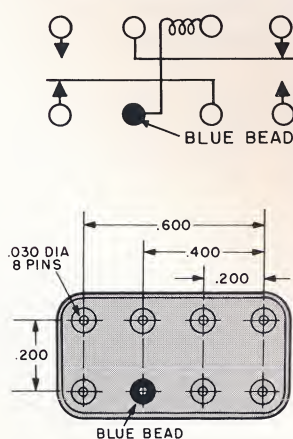
† Applicable over the operating temperature range in circulating air.

SPECS
PG 3

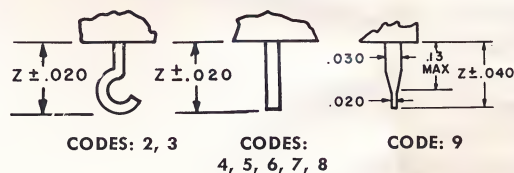
HEADERS

CONNECTION DIAGRAM

2PDT (Sensitivity, CODE: 1)

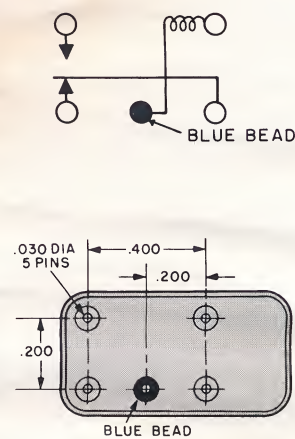


Type	Z Dim.	Header Code
Solder Hook	0.16	2
Solder Hook	0.19	3
Straight-Pin (Socket Type)	0.19	4
Straight-Pin (PCB Type)	0.25	5
Straight Pin	1.00	6
Straight Pin	1.50	7
Straight Pin	2.99	8
Tapered Pin	2.95	9



CONNECTION DIAGRAM

SPDT (Sensitivity, CODE: 2)



Mounting forms

FOR RELAY TYPES 3SBF, 3SAM, 3SAF
(See pages 7 and 9 for other
mounting forms)

ALL DIMENSIONS IN INCHES

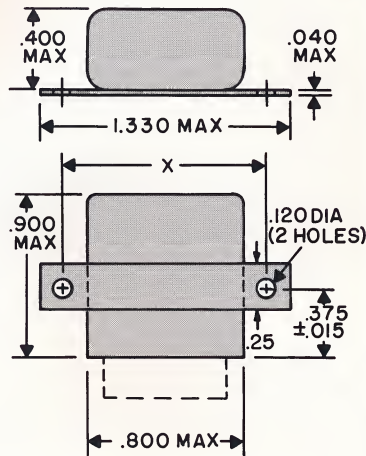
Tolerances
(unless otherwise specified)

Hundredths	± 0.020
Thousandths	± 0.005

Two-hole side bracket

Mounting Code	X Dim.	Vibration†
04	1.062	25g
05	1.100	25g

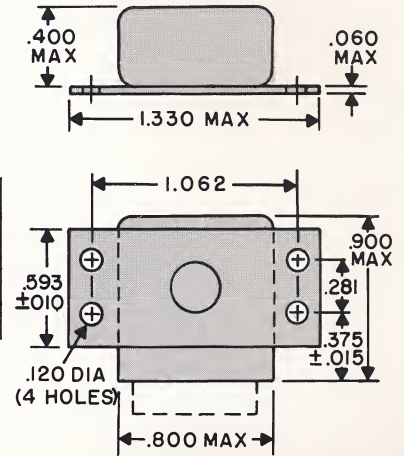
† Derate 3SBF relays 5g's.



Four-hole side bracket

Mounting Code	Vibration†
06	30g

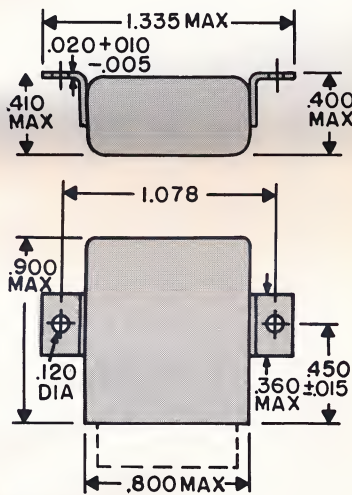
† Derate 3SBF relays 5g's.



Two-hole tab bracket

Mounting Code	Vibration†
25	25g

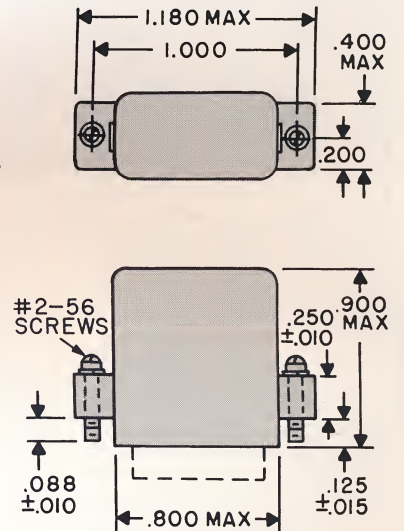
† Derate 3SBF relays 5g's.



Two-hole end lugs with captive screws

Mounting Code	Vibration†
31	30g

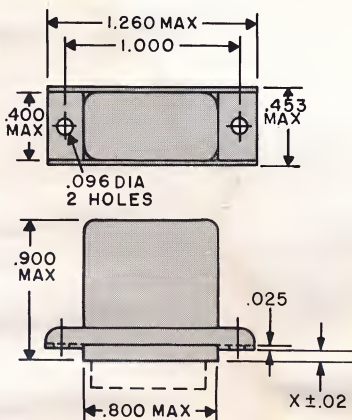
† Derate 3SBF relays 5g's.



Two-hole channel bracket

Mounting Code	X Dim.	Vibration†
40	0.125	30g
41	0.250	30g
42	0.450	30g

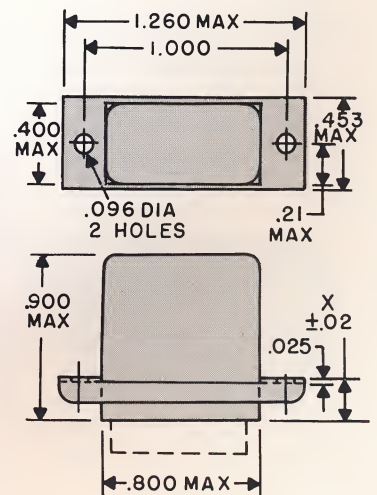
† Derate 3SBF relays 5g's.



Two-hole channel bracket (inverted)

Mounting Code	X Dim.	Vibration†
43	0.200	30g
44	0.450	30g
45	0.900	30g

† Derate 3SBF relays 5g's.



Extra-sensitive, grid space, micro-miniature relays

TYPE 3SAT

FEATURES

- 40-milliwatt operate sensitivity for double-pole units, 25-milliwatt for single-pole
- all-welded construction including enclosure-to-header seal
- power or low-level switching capability
- available radiation hardened

DESCRIPTION

General Electric Type 3SAT, micro-miniature relays are designed for applications that restrict coil operating power but require performance equal to or

better than that of relays with 250 milliwatts or more sensitivity.

Power requirements for the Type 3SAT series are only 25 milliwatts maximum at 25°C for single-pole units, and 40 milliwatts maximum at 25°C for double-pole units.

Optimum design of magnet, contact structure, and return-spring system provides these highly sensitive relays with their superior operating characteristics. And, all-welded construction, including the enclosure-to-header seal, plus General Electric's proven reputation for manufacturing only quality, highly reliable relays mean you get further assurance of top performance from the new Type 3SAT relay line.



COIL TABLE (ALL VALUES D-C)*

Current Calibrated CODE: 6

Coil Code Letter	Coil Resistance Ohms at 25 C	2PDT 40MW Sensitivity, CODE: 1			SPDT 25MW Sensitivity, CODE: 2		
		Max Operate Current (MA) at 25 C	Release Current (MA) at 25 C		Max Operate Current (MA) at 25 C	Release Current (MA) at 25 C	
			Max	Min		Max	Min
A	20 ± 10%	45.0	22.5	4.5	35.3	17.7	3.5
B	30 ± 10%	36.5	18.2	3.7	28.8	14.4	2.9
C	50 ± 10%	28.5	14.2	2.8	22.3	11.2	2.2
D	75 ± 10%	23.0	11.5	2.3	18.2	9.1	1.8
E	100 ± 10%	20.0	10.0	2.0	15.8	7.9	1.58
F	200 ± 10%	14.2	7.1	1.4	11.2	5.6	1.12
H	300 ± 10%	11.5	5.7	1.2	9.2	4.6	0.92
K	500 ± 10%	9.0	4.5	0.9	7.1	3.6	0.70
L	875 ± 10%	6.8	3.4	0.7	5.4	2.7	0.54
M	1000 ± 10%	6.3	3.1	0.65	5.0	2.5	0.50
N	1500 ± 10%	5.2	2.6	0.55	4.1	2.1	0.40
P	2000 ± 10%	4.5	2.2	0.50	3.6	1.8	0.35
R	2500 ± 10%	4.0	2.0	0.40	3.2	1.6	0.32
S	4300 ± 10%	3.0	1.5	0.30	2.4	1.3	0.24
T	5000 ± 10%	2.8	1.4	0.28	2.3	1.2	0.22
V	8000 ± 10%	2.3	1.1	0.23	1.8	0.9	0.18
W	10000 ± 10%	2.0	1.0	0.20	1.6	0.8	0.16

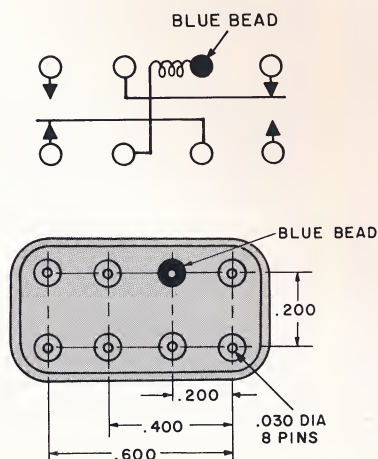
* Values listed are factory test and inspection values. User should allow for meter variations.

Note: Suggested source current: use 150% to 200% of max current operate values.

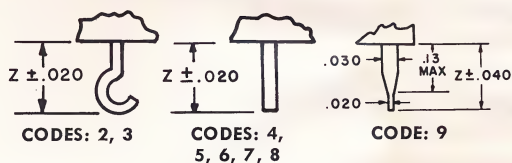
HEADERS

CONNECTION DIAGRAM

2PDT (Sensitivity, CODE: 1)

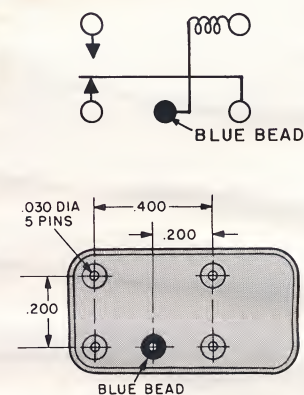


Type	Z Dim.	Header Code
Solder Hook	0.16	2
Solder Hook	0.19	3
Straight-Pin (Socket Type)	0.19	4
Straight-Pin (PCB Type)	0.25	5
Straight Pin	1.00	6
Straight Pin	1.50	7
Straight Pin	2.99	8
Tapered Pin	2.95	9



CONNECTION DIAGRAM

SPDT (Sensitivity, CODE: 2)



Mounting forms

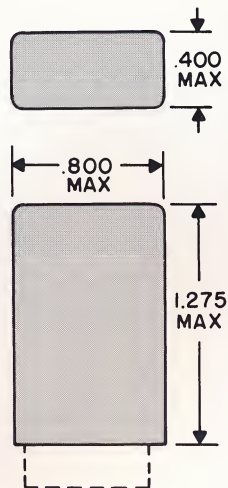
ALL DIMENSIONS IN INCHES

Tolerances (unless otherwise specified)	
Hundredths	± 0.020
Thousandths	± 0.005

No mount

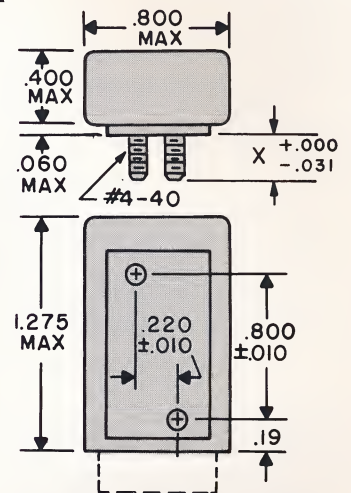
Mounting Code	Vibration*
00	20g

* Assumes relay held securely by potting or other means.



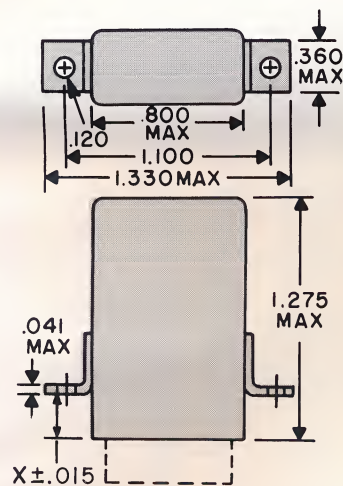
Side studs

Mounting Code	X Dim.	Vibration
07	0.250	20g
08	0.375	20g



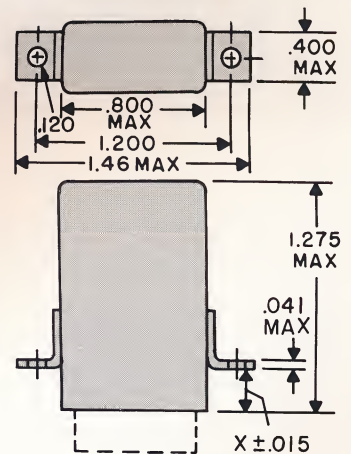
Two-hole end tab, 1.1 in. centers

Mounting Code	X Dim.	Vibration
13	0.125	20g
14	0.250	20g
15	0.312	20g
16	0.450	20g



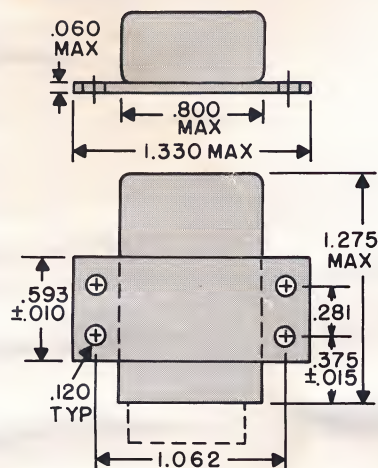
Two-hole end tab, 1.2 in. centers

Mounting Code	X Dim.	Vibration
17	0.125	20g
18	0.250	20g
19	0.312	20g
20	0.450	20g



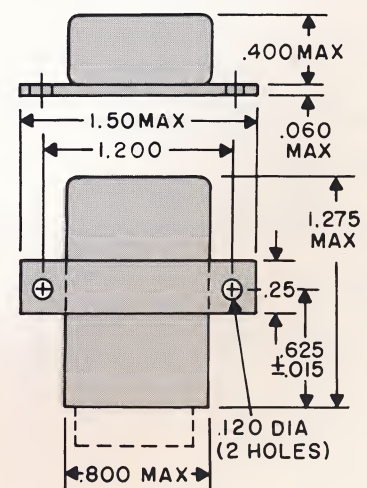
Four-hole side bracket

Mounting Code	Vibration
06	20g



Two-hole side bracket

Mounting Code	Vibration
04	20g



Crystal-can micro-miniature relays

TYPES 3SAE, 3SAC

FEATURES

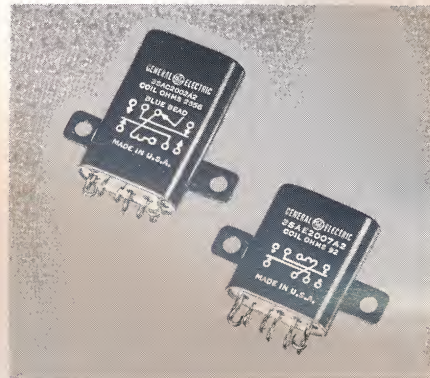
- Small lightweight crystal can type
- 0.25 cubic inch, 0.60 ounces
- Power or low level switching
- 20g to 2000 cps vibration immunity

DESCRIPTION

General Electric's line of micro-miniature crystal can relays is backed by ten years of experience and millions of relays operating in the field. Dual-coil construction of the G-E micro-miniature relay results in a more efficient magnetic circuit which requires less operating power. A

balanced armature combined with high tip forces gives the relay excellent resistance to shock and vibration.

Each coil receives a lengthy vacuum degas, and each relay assembly is carefully processed with a complete high temperature vacuum degas cycle and three cleaning cycles before sealing. All adjust procedures and quality control tests are performed with low energy loads making all relays suitable for low level or power switching. This relay is available in two sensitivity ranges and hundreds of mounting and header combinations. Coil resistances range from 22 to 10,000 ohms.



COIL TABLE (ALL VALUES DC)*

Type 3SAE 330 MW sensitivity CODE: 1

Coil Code Letter	Voltage Calibrated, CODE: 5				Release Voltage at 25 C	
	Coil Resistance at 25 C Ohms	Suggested Source Volts†	Maximum Operate Volts at 25 C		Max	Min
A	22 ±10%	3.9- 5.9	2.7		1.4	0.29
B	34 ±10%	4.8- 7.4	3.3		1.7	0.36
C	53 ±10%	6.2- 9.2	4.2		2.2	0.46
D	92 ±10%	8.0-12.0	5.4		2.8	0.60
E	146 ±10%	10.2-15.0	6.9		3.6	0.76
F	215 ±10%	12.3-18.5	8.3		4.3	0.92
H	342 ±10%	15.4-23.0	10.4		5.4	1.16
K	552 ±10%	20.0-29.5	13.5		7.0	1.50
L	814 ±10%	25.0-36.0	16.9		8.8	1.88
M	1180 ±10%	30.0-43.0	20.5		10.6	2.28
N	1278 ±15%	31.0-41.5	21.3		11.0	2.36
P	1800 ±15%	38.0-49.0	25.8		13.3	2.86
R	2530 ±15%	43.0-58.5	29.0		15.0	3.22
S	2950 ±15%	50.0-63.0	34.0		17.5	3.77
T	5000 ±20%	62.0-75.0	41.8		21.6	4.64
V	5170 ±20%	68.0-76.0	46.0		25.4	5.12

Type 3SAC 200 MW sensitivity CODE: 2

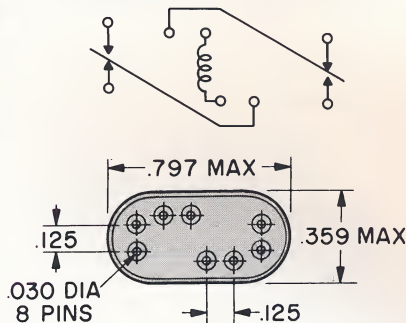
Coil Code Letter	Current Calibrated, CODE: 6				Release Current at 25 C (MA)	
	Coil Resistance at 25 C (Ohms)	Maximum Operate Current at 25 C (MA)	Maximum Continuous Current at 125 C (MA) †		Max	Min
A	184 ±10%	32.0	65.0		16.5	3.53
B	292 ±10%	25.6	51.5		13.3	2.84
C	430 ±10%	20.8	42.5		10.8	2.31
D	684 ±10%	16.4	33.5		8.5	1.80
E	1104 ±10%	13.2	26.5		6.9	1.46
F	1628 ±10%	11.2	21.7		5.8	1.24
H	2360 ±15%	9.4	16.8		4.9	1.04
K	2556 ±15%	9.0	16.2		4.7	0.99
L	3600 ±15%	7.7	13.5		4.1	0.86
M	5060 ±15%	6.2	11.5		3.3	0.69
N	5900 ±15%	6.2	10.5		3.3	0.71
P	10000 ±20%	4.5	7.5		2.4	0.50
R	10340 ±20%	4.8	7.4		2.5	0.54

* Values listed are factory test and inspection values. User should allow for meter variations.
† Applicable over the operating temperature range in circulating air.

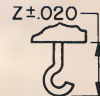
HEADERS

Type	Z Dim.	Header Code
Solder hook	0.13	1
Solder hook	0.19	3
Straight pin (socket type)	0.19	4
Straight pin	1.00	6
Straight pin	2.99	8
Tapered pin	2.98	9

CONNECTION DIAGRAM



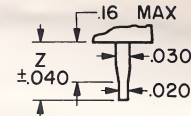
CODES: 1, 3



CODES: 4, 6, 8



CODE: 9

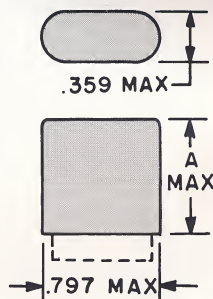


Mounting forms

No mount

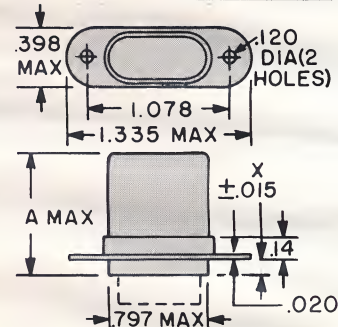
Mounting Code	A Dim. (Max.)	Vibration*	Relay Type
00	0.875	20g	3SAE
00	1.187	15g	3SAC

* Assumes relay securely held by potting or other means.



Flange mount, 2 in-line holes

Mounting Code	A Dim. (Max.)	X Dim.	Vibration	Relay Type
13	0.875	0.125	15g	3SAE
13	1.187	0.125	10g	3SAC
14	0.875	0.375	20g	3SAE
14	1.187	0.455	15g	3SAC



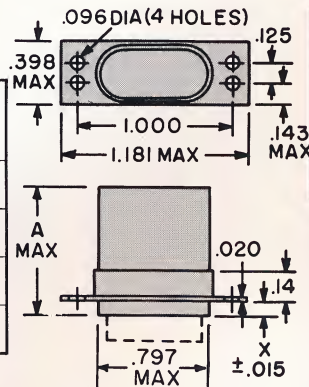
Mounting forms

ALL DIMENSIONS IN INCHES

Tolerances (unless otherwise specified)	
Hundredths	± 0.020
Thousandths	± 0.005

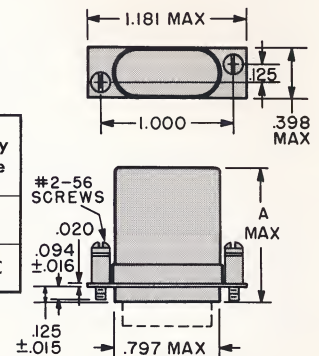
Diagonal two-hole flange

Mounting Code	A Dim. (Max)	X Dim.	Vibration	Relay Type
01	0.875	0.125	15g	3SAE
01	1.187	0.125	10g	3SAC
02	0.875	0.375	20g	3SAE
02	1.187	0.455	15g	3SAC



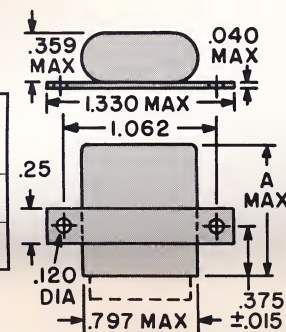
Diagonal two-hole flange with captive screws

Mounting Code	A Dim. (Max)	Vibration	Relay Type
30	0.875	15g	3SAE
30	1.187	10g	3SAC



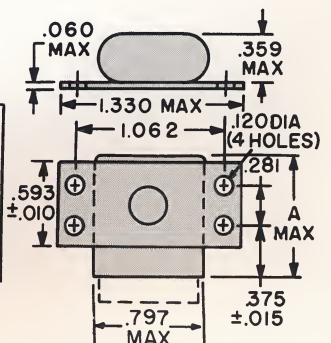
Two-hole side bracket

Mounting Code	A Dim. (Max)	Vibration	Relay Type
04	0.875	20g	3SAE
04	1.187	15g	3SAC



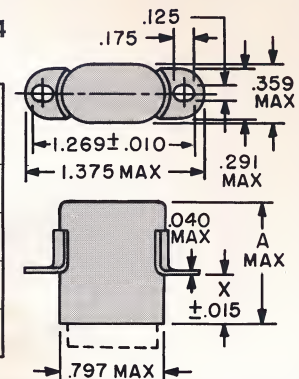
Four-hole side bracket

Mounting Code	A Dim. (Max)	Vibration	Relay Type
06	0.875	20g	3SAE
06	1.187	15g	3SAC



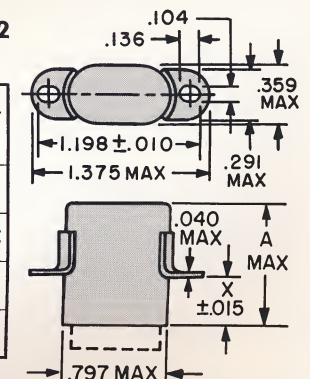
Two-hole end bracket, 1.094 in. mounting centers

Mounting Code	A Dim. (Max)	X Dim.	Vibration	Relay Type
17	0.875	0.125	15g	3SAE
17	1.187	0.125	10g	3SAC
18	0.875	0.375	20g	3SAE
18	1.187	0.455	15g	3SAC



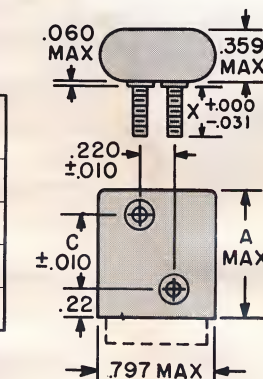
Two-hole end bracket, 1.062 in. mounting centers

Mounting Code	A Dim. (Max)	X Dim.	Vibration	Relay Type
15	0.875	0.125	15g	3SAE
15	1.187	0.125	10g	3SAC
16	0.875	0.375	20g	3SAE
16	1.187	0.455	15g	3SAC



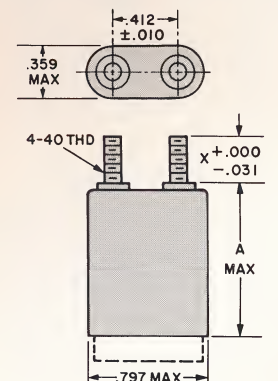
Side studs

Mounting Code	A Dim. (Max)	C Dim.	X Dim.	Vibration	Relay Type
07	0.875	0.488	0.375	20g	3SAE
07	1.187	0.800	0.375	15g	3SAC
08	0.875	0.488	0.250	20g	3SAE
08	1.187	0.800	0.250	15g	3SAC



Top studs

Mounting Code	A Dim. (Max)	X Dim.	Vibration	Relay Type
10	0.940	0.375	20g	3SAE
10	1.252	0.375	15g	3SAC
11	0.940	0.250	20g	3SAE
11	1.252	0.250	15g	3SAC



Four-pole, grid space, micro-miniature relays

TYPE 3SAH

FEATURES

- Welded construction
- All relays suitable for either power or low level switching
- 30g to 3000 cps vibration
- Low power requirements (400 milliwatts)

DESCRIPTION

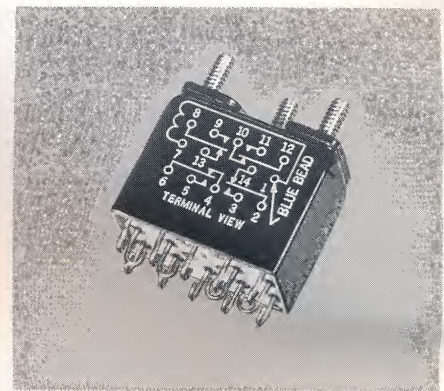
The GE Type 3SAH four-pole double-throw micro-miniature relay features welded construction, ceramic spool body and actuator, and specially processed high temperature insulation. Contamination is thus minimized, high temperature operation is optimized for both low level and power switching loads.

Type 3SAH relays are rated 2 amperes

at 28 volts d-c or 1 ampere at 115 volts a-c resistive. Relay is d-c operated employing a highly efficient E-type magnet. The knife edge armature bearing and other proven design features provide a structure which consistently yields mechanical life of over ten million operations.

This compact four-pole unit conforms to the standard grid pattern which many electronic and component manufacturers are utilizing. Terminals are on 0.2 centers and mounting holes are on 1.2-inch centers. Thus, the relay is adapted for both printed circuit board and chassis mount.

Relay circuitry is symmetrical, thus greatly simplifying wiring and minimizing wiring errors. Socket-mounted units



can be turned end-for-end, cannot be plugged incorrectly, and need no polarizing pin.

COIL TABLE (ALL VALUES D-C)*
400 MW sensitivity CODE: 1

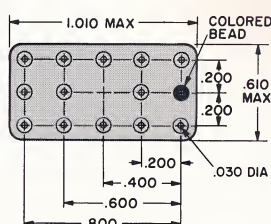
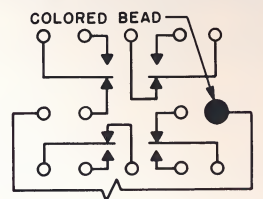
Coil Code Letter	Coil Resistance at 25 C (ohms)	Voltage Calibrated, CODE: 5				Current Calibrated, CODE: 6			
		Suggested Source Volts†	Maximum Operate Volts at 25 C	Release Voltage Range at 25 C		Maximum Continuous Current at 125 C (MA)†	Maximum Operate Current at 25 C (MA)	Release Current Range at 25 C (MA)	
				Max	Min			Max	Min
A	20 ± 10%	4.1- 6.7	2.7	1.4	0.4	210	135.0	70.0	20.0
B	32 ± 10%	5.1- 8.5	3.4	1.7	0.5	166	105.0	53.0	15.5
C	49 ± 10%	6.3- 11.0	4.2	2.2	0.6	135	85.0	45.0	12.0
D	75 ± 10%	7.8- 13.0	5.2	2.7	0.8	110	70.0	36.0	10.5
E	117 ± 10%	9.8- 16.5	6.6	3.4	1.0	87	56.0	29.0	8.5
F	206 ± 10%	13.2- 22.0	8.8	4.6	1.3	66	43.0	22.5	6.3
H	320 ± 10%	17.0- 27.0	11.4	5.6	1.7	55	36.0	17.5	5.3
K	500 ± 10%	20.0- 34.0	13.5	7.0	2.0	42	27.0	14.0	4.0
L	765 ± 10%	25.0- 41.0	16.9	8.8	2.5	35	22.0	11.5	3.3
M	1230 ± 10%	32.0- 52.0	21.8	11.3	3.2	27	18.0	9.5	2.6
N	1750 ± 10%	40.0- 62.0	26.4	13.7	3.9	23	15.0	8.0	2.2
P	2590 ± 15%	49.0- 71.0	32.6	16.9	4.8	18	12.5	6.5	1.8
R	4000 ± 15%	62.0- 90.0	41.4	21.5	6.1	14	10.5	5.5	1.5
S	6500 ± 15%	81.0-115.0	54.0	28.0	8.0	11	8.5	4.5	1.2
T	11300 ± 20%	110.0-135.0	73.5	38.0	11.0	8	6.5	3.5	0.9

* Values listed are factory test and inspection values. User should allow for meter variations. † Applicable over the operating temperature range in circulating air.

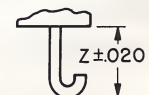
HEADERS

Type	Z Dim.	Header Code
Solder hook	0.16	2
Straight pin (Socket type)	0.19	4
Straight pin (PCB type)	0.25	5
Straight pin	2.99	8
Tapered pin	2.97	9

CONNECTION DIAGRAM



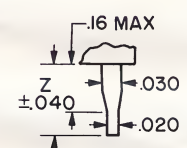
CODE: 2



CODES: 4, 5, 8



CODE: 9



Mounting forms

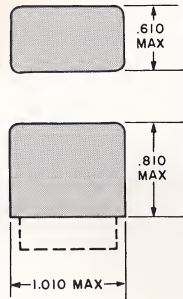
ALL DIMENSIONS IN INCHES

Tolerances (unless otherwise specified)	
Hundredths	± 0.020
Thousandths	± 0.005

No mount

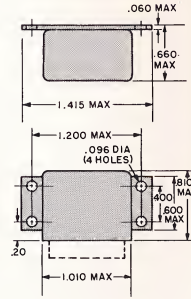
Mounting Code	Vibration *
00	30g

* Assumes relay securely held by potting or other means.



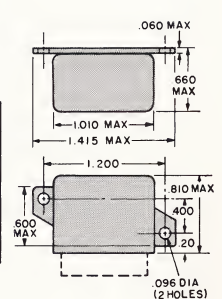
Four-hole side bracket

Mounting Code	Vibration
06	30g



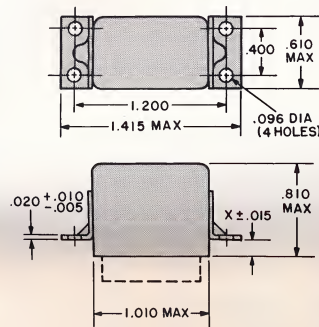
Diagonal two-hole side bracket

Mounting Code	Vibration
04	25g



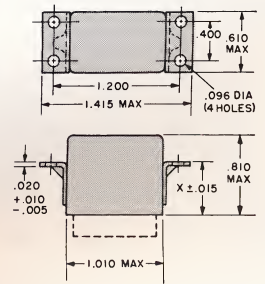
Four-hole end bracket, 1.2 in. centers

Mounting Code	X Dim.	Vibration
13	0.125	30g
14	0.250	30g
15	0.325	30g



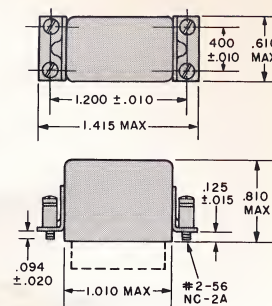
Four-hole end bracket (inverted), 1.2 in. centers

Mounting Code	X Dim.	Vibration
16	0.515	30g
17	0.810	20g



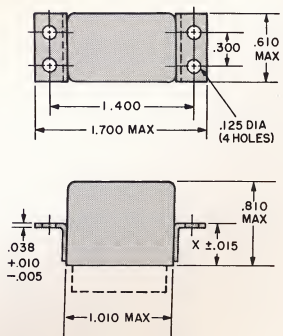
Four-hole end bracket with captive screws

Mounting Code	Vibration
30	30g



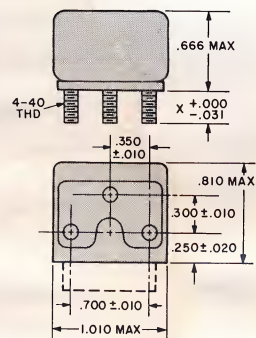
Four-hole end bracket (inverted), 1.4 in. centers

Mounting Code	X Dim.	Vibration
18	0.395	30g
19	0.810	30g



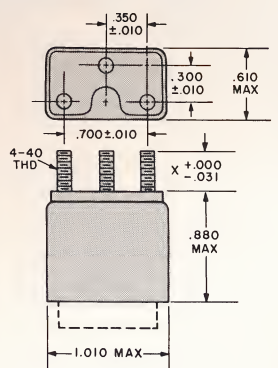
Side studs

Mounting Code	X Dim.	Vibration
07	0.375	30g
08	0.250	30g



Top studs

Mounting Code	X Dim.	Vibration
10	0.375	30g
11	0.250	30g



Unimite relays

TYPE 3SAK

FEATURES

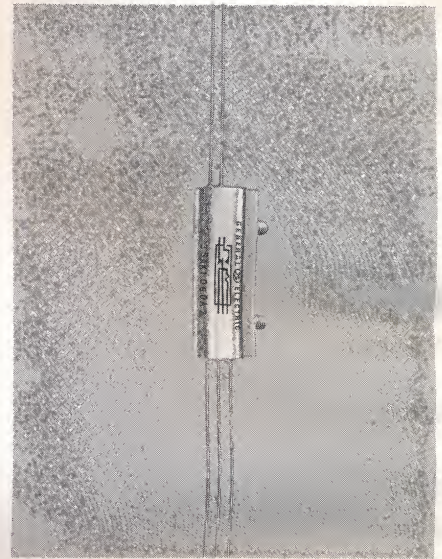
- All-welded construction
- Isolated contact chamber
- High-speed (1.5 millisecond) operation
- Cylindrical surface-hugging shape

DESCRIPTION

The Type 3SAK Unimite relay is the smallest and lightest weight one-ampere relay available for military applications. Notable among the user benefits provided by the Unimite is its extremely fast operate time—1.5 milliseconds maximum operate and 3.5 milliseconds maximum release. The relay can be cycled at rates as high as 10,000 operations per minute, a unique feature among general purpose relays.

The Unimite relay was specifically designed for mounting directly on printed circuit boards. Its shape and form, however, make it so versatile that it may be conveniently placed almost anywhere according to the applicable circuit requirements. Also, the Unimite's small size and low power requirements make practical its use in multiples when a variety or diversity of contact arrangements is desired. To the equipment designer, these features mean more flexibility than ever before possible in the utilization of relays.

CONNECTION DIAGRAM



COIL TABLE (ALL VALUES D-C)*
250 MW sensitivity, CODE: 1

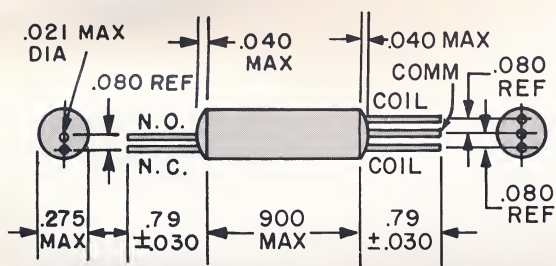
Coil Code Letter	Coil Resistance at 25 C (ohms)	Voltage Calibrated, CODE: 5				Current Calibrated, CODE: 6			
		Suggested Source Volts†	Maximum Operate Volts at 25 C	Release Voltage Range at 25 C		Maximum Continuous Current at 125 C (MA)†	Maximum Operate Current at 25 C (MA)	Release Current Range at 25 C (MA)	
				Max	Min			Max	Min
A	32 ±10%	4.2– 6.2	2.8	1.5	0.3	130	87.5	47.0	9.4
B	41 ±10%	5.0– 7.5	3.4	1.8	0.3	114	83.0	44.0	7.3
C	60 ±10%	5.3– 8.0	3.6	1.9	0.4	94	60.0	32.0	6.6
D	95 ±10%	6.8–10.0	4.6	2.4	0.5	75	48.5	25.0	5.2
E	145 ±10%	8.4–12.5	5.7	2.9	0.6	61	39.0	20.0	4.1
F	200 ±10%	10.0–15.0	6.8	3.6	0.7	52	34.0	18.0	3.5
H	220 ±10%	10.5–16.0	7.5	3.7	0.8	49	32.0	17.0	3.6
K	360 ±10%	13.5–20.0	9.2	4.8	1.0	38	26.0	13.5	2.8
L	500 ±10%	16.0–25.0	11.0	5.7	1.2	33	22.0	11.5	2.4
M	725 ±10%	20.0–30.0	13.5	7.0	1.5	27	18.5	9.7	2.0
N	1100 ±10%	25.0–37.0	17.0	8.8	1.9	22	15.5	8.0	1.7
P	1780 ±10%	33.0–50.0	22.5	11.6	2.5	17	12.5	6.5	1.4
R	3100 ±10%	44.0–66.0	30.0	15.6	3.3	13	9.7	5.0	1.0

* Values listed are factory test and inspection values. User should allow for meter variations.
† Applicable over the operating temperature range in circulating air.

Mounting forms

ALL DIMENSIONS IN INCHES

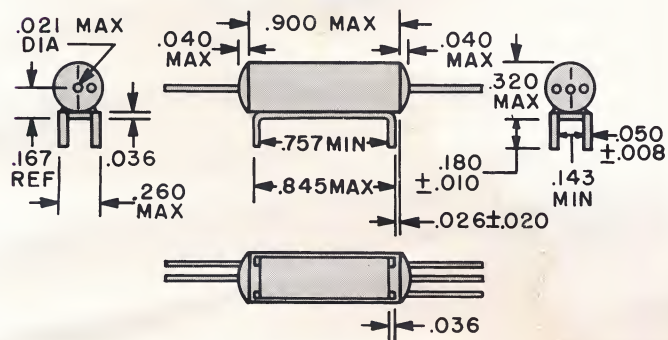
Tolerances (unless otherwise specified)	
Hundredths	± 0.020
Thousandths	± 0.005



No mount

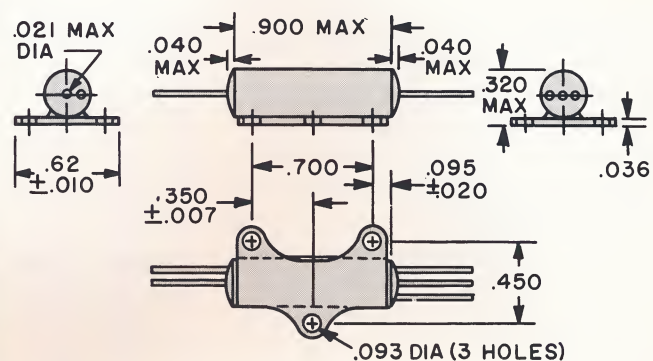
Mounting and Header Code	Vibration*
005	30g

* Must be firmly mounted by potting or other means.



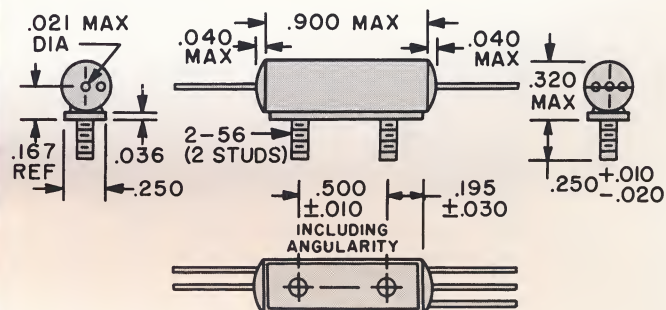
Four-tab PCB

Mounting and Header Code	Vibration
505	30g



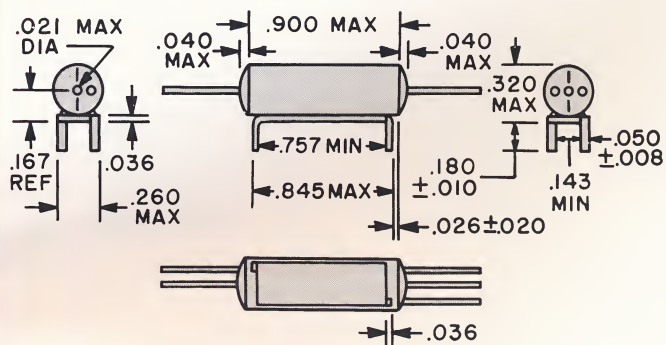
Three-hole bracket

Mounting and Header Code	Vibration
065	20g



Two-stud

Mounting and Header Code	Vibration
075	20g



Two-tab PCB

Mounting and Header Code	Vibration
515	20g

Miniature relays

TYPE 3SAA

FEATURES

- Multi-contact arrangements
- Reliable molded contact structure
- Powerful E-frame magnet
- Long-life, knife-edge armature pivot
- Light- and heavy-duty contacts

DESCRIPTION

General Electric's Type 3SAA Miniature relay is designed to combine small size with high contact rating and multi-contact arrangements. Contained within the hermetically-sealed enclosure is a powerful E-frame magnet which provides high pull forces. This permits higher contact forces, and more contact wipe and overtravel to yield greater capacity and fidelity of switching and longer contact life. The molded contact structure

simplifies adjustment, assures consistent quality and increases the dielectric strength. These features, combined with a knife-edged armature pivot which extends the mechanical life into billions of operations, gives an over-all high-quality relay.

OPTIONAL FEATURES

By specifying in writing, the following are available:

1. Make-before-break contacts (form D) can be substituted for any double-throw contact (at reduced rating).
2. High vibration resistance—10g's to 500 cps.
3. Time delay—up to 50 milliseconds on pick-up and drop-out.



COIL TABLE (ALL VALUES D-C)*

Voltage Calibrated, CODE: 5

Coil Code Letter	Coil Resistance at 25 C (Ohms)	SPNO, 2PNO, 4PDT, 6PNO 600 MW Sensitivity, CODE: 1				2PDT 350 MW Sensitivity, CODE: 2			
		Suggested Source Volts†	Max Operate Volts at 25 C	Release Voltage at 25 C		Suggested Source Volts†	Max Operate Volts at 25 C	Release Voltage Range at 25 C	
				Max	Min			Max	Min
A	1.2 ±10%	1.2– 1.5	0.75	0.37	0.08	0.9– 1.5	0.54	0.27	0.05
B	3.1 ±10%	1.8– 2.5	1.2	0.60	0.12	1.4– 2.5	0.86	0.43	0.08
C	7.6 ±10%	2.9– 4.0	1.9	0.95	0.19	2.3– 4.0	1.4	0.70	0.14
D	18.5 ±10%	4.7– 6.0	3.1	1.5	0.31	3.7– 6.0	2.2	1.1	0.22
E	29 ±10%	6.0– 8.0	3.9	1.9	0.39	4.5– 8.0	2.7	1.4	0.27
F	44 ±10%	7.3– 9.6	4.8	2.4	0.48	5.7– 9.6	3.4	1.7	0.34
H	70 ±10%	9.3– 12.0	6.1	3.0	0.61	7.2– 12.0	4.3	2.2	0.43
K	180 ±10%	14.8– 19.0	9.7	4.8	0.97	11.5– 19.0	6.9	3.5	0.69
L	278 ±10%	18.7– 24.0	12.2	6.1	1.2	14.5– 24.0	8.7	4.4	0.90
M	425 ±10%	23.0– 30.0	15.0	7.5	1.5	18.0– 30.0	10.7	5.4	1.1
N	670 ±10%	29.0– 38.0	19.0	9.5	1.9	23.0– 38.0	13.6	6.8	1.4
P	1150 ±10%	38.0– 49.0	24.6	12.3	2.4	29.5– 49.0	17.6	8.8	1.8
R	1835 ±10%	49.0– 63.0	31.7	15.8	3.2	38.0– 63.0	22.7	11.4	2.3
S	2860 ±10%	60.0– 78.0	39.0	19.5	3.9	46.5– 78.0	27.8	13.9	2.8
T	4350 ±10%	73.0– 96.0	48.0	24.0	4.8	58.0– 96.0	34.4	17.2	3.4
V	7000 ±10%	95.0–125.0	62.3	31.2	6.2	75.0–125.0	44.5	22.2	4.5
W	10000 ±15%	119.0–155.0	77.7	38.8	7.7	93.0–155.0	55.5	27.5	5.5
X	16000 ±15%	148.0–195.0	97.4	48.7	9.7	116.0–195.0	69.5	34.8	7.0
Y	29000 ±15%	200.0–265.0	132.4	66.2	13.2	159.0–265.0	94.5	47.2	9.5

* Values listed are factory test and inspection values. User should allow for meter variations.
† Applicable over the operating temperature range in circulating air.

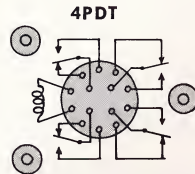
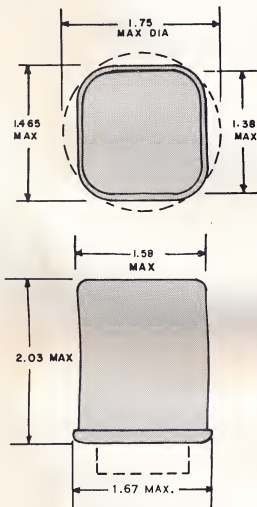
HEADER-CONTACT AND MOUNTING FORMS

Choose a header-contact code (top) and a mounting code (bottom) for each relay. Only combinations available are those shown in the same box.

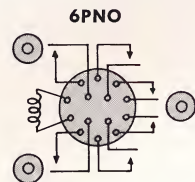
ALL DIMENSIONS
IN INCHES

Tolerances (unless otherwise specified)	
Hundredths	±0.015
Thousandths	±0.005

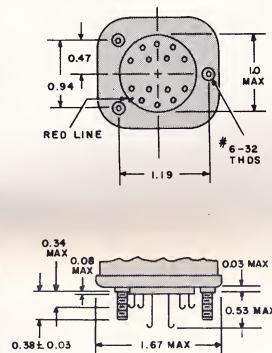
Shown here are various header-contact and mounting forms available with 3SAA relays. All header-contact illustrations are terminal views. Over-all common dimensions are shown below.



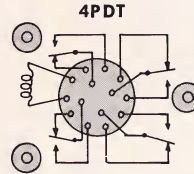
CODE: 4



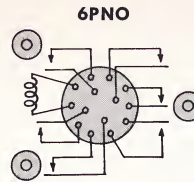
CODE: 5



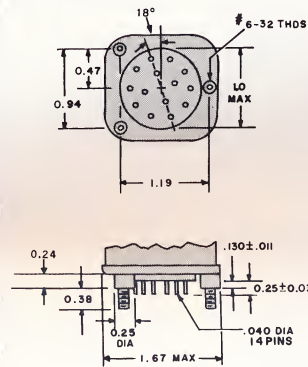
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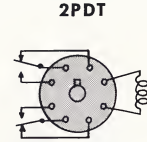
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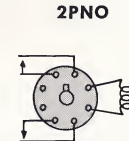
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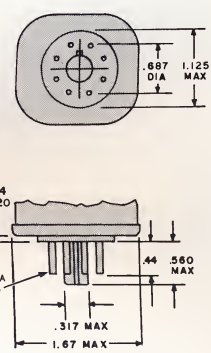
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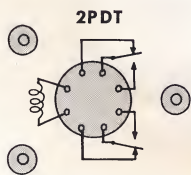
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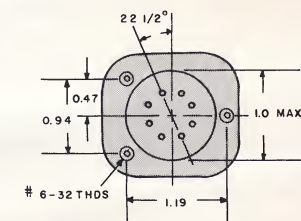
CODE: 2



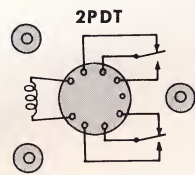
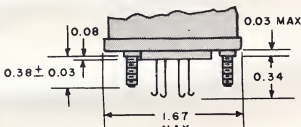
CODE: 02



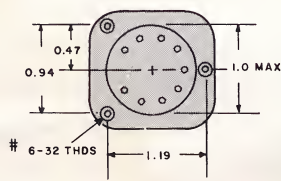
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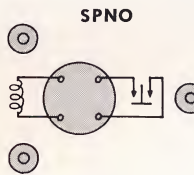
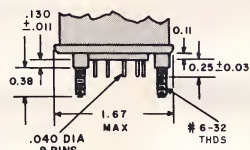
CODE: 03



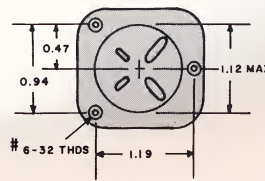
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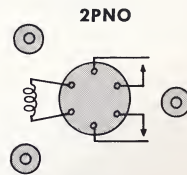
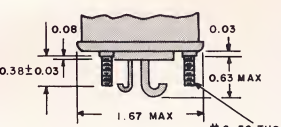
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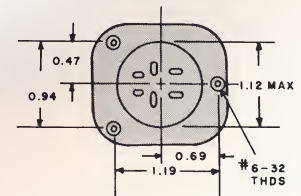
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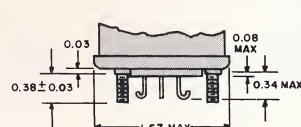
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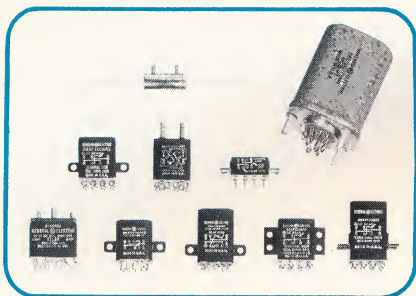
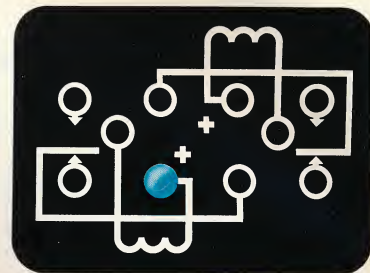
CODE: 2



CODE: 06



4 added benefits make G-E sealed relays your best buy



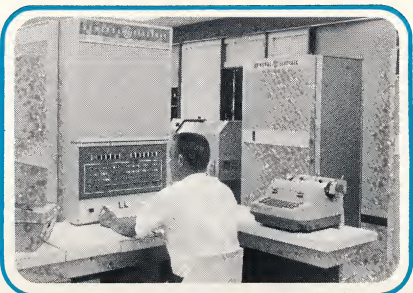
COMPLETE SELECTION

Sealed relays for every application are available from General Electric. Many variations of those described in this catalog can be obtained on request for your special needs.



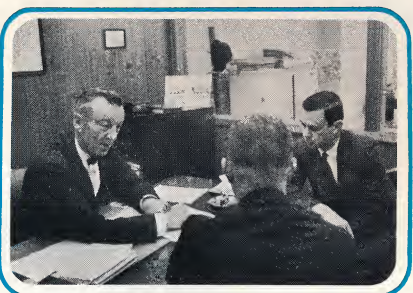
UNMATCHED PRODUCT RELIABILITY

A recent million-dollar investment in plant facilities lets General Electric serve you better by bringing you even more reliable sealed relays and many new product improvements.



FAST DELIVERY

Computerized order processing and a wide selection of sealed relays in stock cut delivery time to a minimum.



APPLICATION ASSISTANCE

Specially qualified G-E sealed relay Sales and Application Engineers are located nation-wide to help you with application requirements.

For ordering assistance or more information, contact your nearest General Electric Sales Office or Distributor. For latest pricing information, ask for Bulletin GEZ-2554.

GENERAL  ELECTRIC

SPECIALTY CONTROL DEPARTMENT
WAYNESBORO, VIRGINIA

GEA-6628C
3/65 (25M)
2300/3010/10117

PRINTED
U.S.A.



Relay Pricing Information

for use with GEA-6628C

All prices subject to change without notice

June 16, 1965

DISCOUNT SCHEDULE

Discounts are applicable to list prices and to any adders.

Quantity	Discount
1 to 9	List
10 to 24	12%
25 to 49	25%
50 to 99	32%
100 to 249	37%
250 to 499	41%

Discounts apply only to quantities of identical relays or sockets calling for shipment within three months of the date of order. Where more than one type is included in any order, discounts are calculated separately for each.

RELAYS		ADDERS					
Relay Type	Base List Price	Mounting Code	Price Adder	Header Code	Price Adder	Coil Resist. Code	Price Adder
3SAA	\$13.00	...	\$...	02	\$1.50	Y	\$2.00
3SAC	15.60	00	None	6	0.30	L through R	2.60
		30	0.80	8	0.50		
		All others	0.30	9	2.00		
3SAE	13.60	00	None	6	0.30	P through V	1.30
		30	0.80	8	0.50		
		All others	0.30	9	2.00		
3SAF	13.60	00	None	5, 6, 7	0.30	P through T	1.30
		30, 31	0.80	8	0.50		
		All others	0.30	9	2.00		
3SAH	26.00	07 through 11	0.50	8	0.50	R through T	1.00
		30	0.80		3.50		
		All others	None				
3SAK	21.50	P and R	2.00
3SAM Single Coil Dual Coil	16.00 18.00	00	None	3, 6, 9	0.50
		30, 31	0.80				
		All others	0.30				
3SAT	14.00	00	None	5, 6, 7	0.30
		All others	0.30	8	0.50		
				9	2.00		
3SAV	14.00	00	None	5	0.30
		All others	0.30	8	0.50		
				9	2.00		
3SBC	26.00	00	None	1, 4, 8	None
		13.25	0.30	5, 7	0.30		
3SBF	14.00	00	None	5, 6, 7	0.30	V	2.60
		30, 31	0.80	8	0.50		
		All others	0.30	9	2.00		

SOCKETS (For Type 3SBC Relay)

Catalog No.	List Price
44A270996-001	\$5.00
44A270996-002	5.60
44A270996-003	5.60
44A270996-004	5.60

DRY-CIRCUIT PROCESSING

All relays are suitable for dry-circuit operation; however, there will be a price addition for customer specified run-in tests. Refer to Factory for price and discount quotation.

FACTORY QUOTED ONLY (price and discount)

Type 3SAA (Industrial and A-c) Miniature Relays
Type 3SAB Subminiature Relays
Type 3SAN High-speed Relays

For further information, contact your nearby General Electric Electronic Components Sales Office

GENERAL  ELECTRIC

SPECIALTY CONTROL DEPT., WAYNESBORO, VA.

HERE IS THE INFORMATION YOU REQUESTED . . .

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GEA-6628 GEA-8042 GEA-8044

T NELSON SYS CONS

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N Y 12603

GENERAL  ELECTRIC

ELECTRONIC COMPONENTS
SALES OPERATION

THANK YOU . . . for your interest in
General Electric electronic products.

Here is the descriptive material that you recently requested.

If you require more immediate service, may we suggest a call to our nearest
sales office or distributor listed on the attached sheets.

Please Help Us Serve You Better.

Completing this self-addressed form will aid us in better
serving your needs for technical data. Fill out this form . . .
fold it . . . send it to us . . . it's postpaid!

1. I require more detailed information on this specific product:

(Please print product name.)

2. My inquiry is for (check one) _____ a specific current application,
_____ a possible future application, _____ reference file only.

3. This application is for (check one):

_____ Home entertainment or commercial use
_____ Industrial use
_____ Government use

4. This application is the result of (check one) _____ new equipment or sys-
tem design, _____ modification or redesign of existing equipment or system,
_____ substitution of similar type equipment. (Use space below or back of
sheet if required for details.)

5. For this application about how many units will you require? _____

6. Without obligation, please have a sales representative contact me for
assistance. _____

General Electric offers a complete electronic components "market basket" of products. A listing follows:

- | | | | |
|---|----------------------------|---------------------------------|-----------------------------------|
| Circle appropri-
ate numbers for
information you
wish to receive
on any of these
additional prod-
ucts. | TUBE PRODUCTS | | |
| | 1. TWT's | low current (0 to 1.4 | 16. Silicon controlled combina- |
| | 2. Filters | amps) | tion stacks |
| | 3. Water loads | Silicon rectifiers | 17. AC Controlled switches |
| | 4. Transmitter tubes | 14a. low current (0 to 1.4 | 18. Rectifier stacks (Germani- |
| | 5. Klystrons | amps) | um, silicon, potted blocks) |
| | 6. VTM's | 14b. medium current (1.5 to | 19. Assemblies (thyatron re- |
| | 7. Ignitrons | 35.0 amps) | placements, specials) |
| | 7A. Vacuum gaps | 14c. high current (over 35 | 20. Selenium and copper oxide |
| | 7B. Hydrogen thyratrons | amps) | rectifiers |
| | 8. Ceramic tubes | SCR's | 21. Functional components |
| | 9. Photocells | 15a. low current (0 to 7.5 | 22. Silicon controlled switches |
| | 10. Reed switches | amps) | 23. Unijunction transistors |
| 11. Compactrons | 15b. high current (over 35 | 24. Silicon grown-diffused pas- | |
| 12. Conventional receiving tubes | amps) | sivated NPN transistor | |
| SEMICONDUCTOR PRODUCTS | | | 25. Tunnel diodes and back di- |
| 13. Germanium rectifiers | 15c. light activated | odes | 26. Reference amplifiers |
| | | | 27. Silicon planar epitaxial pas- |
| | | | sivated amplifiers and |
| | | | switches |
| | | | 28. Active discrete pellet func- |
| | | | tional devices |
| | | | 29. Signal diodes |
| | | | 30. Matched pairs and quads |
| | | | 31. Silicon mesa NPN passi- |
| | | | vated power transistors |
| | | | CAPACITOR PRODUCTS |
| | | | 32. Film capacitors |
| | | | 33. Energy storage capacitors |
| | | | 34. D-c capacitors |
| | | | 35. A-c capacitors |
| | | | 36. Aluminum electrolytic ca- |
| | | | pacitors |
| | | | 37. Tantalum electrolytic capac- |
| | | | itors |
| | | | VACUUM PRODUCTS |
| | | | 38. Vacuum system |
| | | | 39. Triode ion pumps |
| | | | 40. Trigger gages |
| | | | 41. Mercury diffusion pumps |
| | | | 42. Ion gages |
| | | | 43. Leak detectors |
| | | | 44. Partial pressure analyzers |
| | | | 45. Permeation leak-gas purifi- |
| | | | ers |
| | | | 46. Sublimation pumps |
| | | | 47. Vacuum accessories |

other electronics products (continued)

OTHER PRODUCTS

- 48. Adjustable Speed Drives
- 49. Appliance Controls
- 50. Circuit Protective Devices
- 51. Magnets
- 52. Nickel Cadmium Rechargeable Batteries
- 53. Sealed Relays
- 54. Soldering Irons
- 55. Thermistors

56. Varistors

- GENERAL PURPOSE CONTROL**
- 57. Reed Switch Relays
 - 58. Relays
 - 59. Pushbutton/Indicating Lights
 - 60. Terminal Boards

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- 61. Volt-Pac® Variable Transformers
- 62. A-c Voltage Stabilizers

63. D-c Power Supplies

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- 64. Panel Meters
- 65. Time Meters
- 66. Meter Relays
- 67. Shunts
- 68. Switchboard Indicators
- 69. Recorders (Direct Acting)
- 70. Transducers

RECORDING INSTRUMENTS

- 71. Direct-operated, strip-chart recorders (inking, inkless, hook-on)
- 72. Miniature (4-inch) servo-operated recorders
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- 74. A-c Tri-Clad '55'® induction 1-125 HP
- 75. A-c fractional
- 76. D-c integral
- 77. D-c fractional
- 78. DCM&G sets

For additional details on your application:

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BUSINESS REPLY MAIL

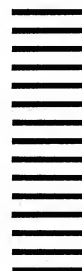
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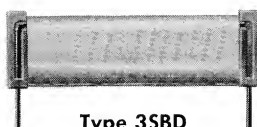
GENERAL  ELECTRIC

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General Electric **High-Performance** MINIATURE **REED** **RELAYS**

For military and special applications



Type 3SBD
Actual size

- **Small size**
- **Long life**
- **High reliability**
- **Fast operate and release time**
- **Pre-bent, fully-protected leads**

GENERAL  **ELECTRIC**

GENERAL ELECTRIC REED RELAYS



provide long electrical and mechanical life

General Electric reed relays are ideal for switching applications where low power, fast operation, long life and extremely small size are desired.

You can choose from a wide variety of normally open or normally closed forms, or a combination of both.

FEATURES

Small size—General Electric's Type 3SBD miniature reed relay is supplied in a package only 1.33 inches long by 0.410 inch high. The nominal width of a single pole relay is only 0.4 inch and additional

poles increase the width by 0.15 inch per pole.

Long life—Because there are no complex working parts, reed relays offer exceptionally long mechanical and electrical life. A typical reed relay will operate 50 million times at low-level loads.

High reliability—Reed relay contacts are sealed in protective capsules which exclude contaminants, therefore offer exceptional reliability.

Fast operate and release time—Because of the very small mass of the reed, the operate and release time of reed relays is

very fast. G-E Type 3SBD reed relays operate in one millisecond or less. Release time is 100 microseconds maximum.

Pre-bent, fully-protected leads—The unique design of the leads on Type 3SBD reed relays means the reed is fully protected during manufacture.

In addition, the leads are fully enclosed except for the part to be connected.

A unique sectional spool body makes it possible to form the capsule leads prior to insertion. This permits the precise fixturing necessary to form the leads without capsule damage.

APPLICATION INFORMATION

Reed relays differ from conventional electro-magnetic relays in a number of respects.

Reed relays have essentially no overload capacity in switching—unlike conventional magnetic relays which usually have overload capabilities of several times rated load.

In multi-pole reed relays, the sequencing of contacts is much more pronounced both on pick-up and drop-out, whereas

contact sequencing in conventional multi-pole relays is minimal.

Also, in multi-pole reed relays, an overlap between the operate voltage on one pole and the release voltage on another pole happens frequently. On conventional relays this does not occur. Also, the spread between pickup from one unit to another, or from one pole to another is greater than for a conventional relay.

The effect of the magnetic field from

adjacent reed relays can be significant if the relays are densely mounted. This effect can be eliminated with proper shielding.

Reed relay contacts can be misaligned easily by improper handling of terminals, therefore the bending or forming of terminals is a critical operation.

Finally, the contact resistance of reed relays is inherently higher and more variable than that of conventional relays.

SPECIFICATIONS (Common to all contact forms)

Contact ratings: Low level to 10 watts resistive. Within the 10-watt limitation, contact current is 0.5 amps, max and contact voltage is 250 volts max.

Life: Varies with specific contact load. A typical value at low level is 50 million operations. At 0.4 amps, 25 volts: 20 million operations.

Contact resistance: 200 milliohms max

initially; 2 ohms during and after life.

Sensitivity: (max operate voltage at 25°C): Approximately 60 milliwatts per pole.

Ambient temperature: -65 to +85°C.

Shock: 50 g's, 11 milliseconds.

Vibration: 20 g's, 55-2000 cps.

Dielectric strength: 1000 volts RMS except

300 volts across open contacts.

Insulation resistance: 10,000 megohms minimum.

Capacitance (maximum):

Across contacts: 2.0 mmf

Between poles: 3.0 mmf

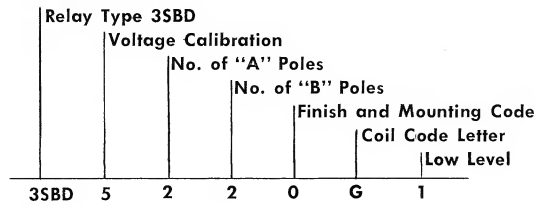
Operate and release time: Values are given with the coil data for each contact form.

ORDERING DIRECTIONS

Order by catalog number, selecting it as follows:

- 1 Relay Type: 3SBD
- 2 Number 5: This signifies a voltage calibrated relay.
- 3 Number 0 to 6: Desired number of "A" poles (normally open).
- 4 Number 0 to 2: Desired number of "B" poles (normally closed)
- 5 Finish and mounting code (for 0.22 straight pins):
0 for unshielded coil
1 for shielded coil
- 6 Coil designation: (see tables)
- 7 Number designating whether power or low level: 1 indicates low level, 2 indicates power.

Example: Relay with 2 normally open poles and 2 normally closed poles, with a coil having a suggested source voltage of 26.5, 0.22 straight pins (unshielded coils), and suitable for low level operation.



Requirements for relays not covered in the standard catalog will be assigned special numbers upon request to factory.

FORM A TYPES (1 to 6 normally open poles)

Operate time: 1.5 milliseconds max including contact bounce

Release time: 0.1 millisecond max

COIL DATA

Coil Code Letter	Number of Normally Open Contacts	Coil Resistance (Ohms)	Suggested Source Voltage	Operate Voltage At 25C Max	Release Voltage At 25C Min	Allowable Voltage Range*
A D G J	1	230 965 3,630 8,530	6 12 26.5 48	4.0 8.1 15.7 25.2	0.4 0.8 1.6 2.5	5.5 - 12 11 - 25 22 - 49 35 - 75
B E H L	2	123 505 1,900 7,200	6 12 26.5 48	3.8 7.6 15.3 30.4	0.4 0.8 1.6 3.2	5.2 - 10 11 - 20 22 - 39 43 - 76
B E H L	3	100 360 1,530 5,780	6 12 26.5 48	4.0 7.9 16.0 31.1	0.4 0.8 1.8 3.5	5.6 - 9.5 11 - 18 22 - 37 44 - 73
B E H L P	4	73 280 1,165 4,800 16,200	6 12 26.5 48 100	4.1 8.1 16.6 33.1 64.2	0.4 0.8 1.8 3.6 7.0	5.7 - 8.8 11 - 17 24 - 35 47 - 69 91 - 127
C F J M R	5	52 205 850 3,160 12,100	6 12 26.5 48 100	4.0 8.0 16.1 31.7 63.4	0.4 0.8 1.7 3.4 6.8	5.6 - 8.2 11.4 - 16.5 23 - 32 45 - 65 91 - 126
C F J M R	6	36 150 550 2,310 8,760	6 12 26.5 48 100	4.0 8.1 15.8 32.1 62.6	0.4 0.8 1.5 3.2 6.3	5.7 - 7.2 11.7 - 15 23 - 29 46 - 58 91 - 112

*Upper limit is maximum allowable at +85C

FORM B TYPES (1 or 2 normally closed poles)

The normally closed contact on a reed relay is actually a normally open contact which is biased closed by a permanent magnet. Operation is accomplished by bucking out the flux of the permanent magnet with the relay coil. Thus a relay

with normally closed contacts is polarized—the coil must be energized with proper polarity or it won't work.

In addition, if too high a value of coil voltage is applied, the contact will reclose

(not only will the coil buck out the permanent magnet, but it will establish enough additional flux to cause the contact to reclose). This reclosure voltage is above the allowed maximum shown in the coil table.

Operate time (time for contact to open): 1.0 millisecond max

Release time (time for contact to close): 1.0 millisecond max

COIL DATA

Coil Code Letter	Number of Normally Closed Contacts	Coil Resistance (Ohms)	Suggested Source Voltage	Operate Voltage At 25C Max	Release Voltage At 25C Min	Allowable Voltage Range*
A D G K	1 or 2	80 295 1,240 4,680	6 12 26.5 48	3.8 7.2 14.7 28.6	0.3 0.7 1.4 2.4	5.5 - 8.0 10.5 - 15 21 - 32 41 - 65

*Upper limit is maximum allowable at 85C.

FORM A/B TYPES (2, 3 or 4 normally open/normally closed poles)

Frequently, a normally open contact and a normally closed (magnetically biased normally open) contact are applied in a common circuit to provide the equivalent

of a double throw contact. Since there is no mechanical coupling between the two contacts, sequencing cannot be guaranteed and both contacts may be closed

momentarily. Therefore, reed relays should not be used in a double throw circuit unless momentary "bridging" of the contacts is permissible.

Operate Time: NO Contact closing: 1.5 ms
NC Contact opening: 1.0 ms

Release Time: NO Contact opening: 0.1 ms
NC Contact closing: 1.0 ms

COIL DATA

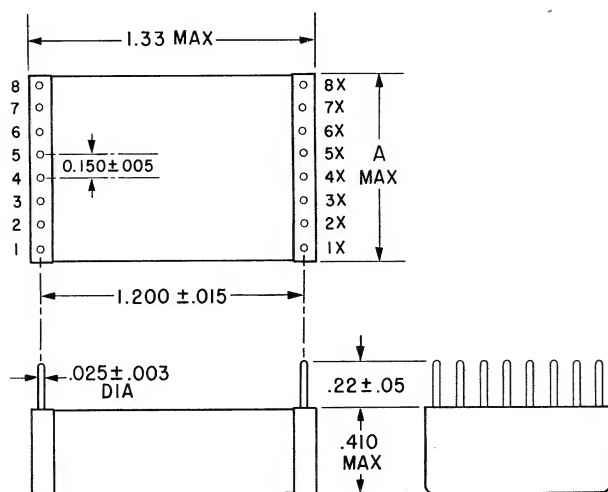
Coil Code Letter	Contact Arrangements	Coil Resistance (Ohms)	Suggested Source Voltage	Operate Voltage At 25C Max	Release Voltage At 25C Min	Allowable Voltage Range*
A D G K	1A/1B or 1A/2B	62 235 985 4,070	6 12 26.5 48	3.7 7.2 15.1 30.0	0.3 0.7 1.5 3.0	5.4 - 7.6 10.6 - 15 22 - 30 44 - 61
A D G K N	2A/1B or 2A/2B	45 180 740 2,760 10,500	6 12 26.5 48 100	3.5 7.1 14.3 28.2 56.4	0.3 0.7 1.4 2.8 5.6	5.2 - 6.9 10.5 - 14 22 - 29 42 - 54 84 - 110

*Upper limit is maximum allowable at 85C.

PHYSICAL DATA

Contact Form	"A" Max Dimension	TERMINAL CONNECTIONS — COIL AND CONTACTS															
		1	2	3	4	5	6	7	8	1X	2X	3X	4X	5X	6X	7X	8X
1A	0.41		+	⊕						⊕	+						
2A	0.57		+	+	⊕					⊕	+	+					
3A	0.72		+	+	+	⊕				⊕	+	+	+				
4A	0.88		+	+	+	+	⊕			⊕	+	+	+	+			
5A	1.03		+	+	+	+	+	⊕		⊕	+	+	+	+	+		
6A	1.19		+	+	+	+	+	+	⊕	⊕	+	+	+	+	+	+	
1B	0.57	⊖	+		⊕						+						
2B	0.57	⊖	+	+	⊕						+	+					
1A/1B	0.72	⊖	+	+		⊕					+	+					
1A/2B	0.72	⊖	+	+	+	⊕					+	+	+				
2A/1B	0.88	⊖	+	+		+	⊕				+	+		+			
2A/2B	0.88	⊖	+	+	+	+	⊕				+	+	+	+			

+ normally open contact + normally closed contact ⊕ positive coil terminal ⊖ negative coil terminal ⊕ either positive or negative coil terminal



For further information and application assistance, contact your local G-E Electronic Components Sales Engineer.

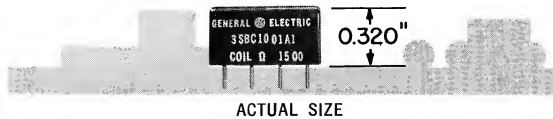
GENERAL  ELECTRIC

SPECIALTY CONTROL DEPARTMENT
WAYNESBORO, VIRGINIA



New 150 Grid-space* relay

TYPE 3SBC (2PDT)



ACTUAL SIZE

FEATURES

- Low profile—only 0.32 inch high
- All-welded construction
- Radiation hardened
- Balanced armature and sturdy suspension system
- High contact force
- 150-mil terminal spacing

The 150 Grid-space relay is General Electric's newest space-saving, high performance sealed relay for mil spec applications. The low profile—only 0.32 inch high—saves space where it's most necessary in electronic circuit packaging.

Its small size is achieved without sacrificing performance. The same type of balanced armature and sturdy suspension

system used in the proved G-E half-size relay is used in the 150 Grid-space relay. Also, an exceptionally efficient magnet design provides high contact force which is comparable to most half-size relays.

Welded construction is used throughout, with electron-beam welding used for the header-to-enclosure seal. The low heat generated by electron-beam welding

prevents any damage to the glass head. Close control of welding—possible with this process—results in a strong, permanent seal.

Pin spacing for the relay is 150 mils, which provides sufficient room for terminal connections to be made without crowding. It also assures good dielectric capability.

SPECIFICATIONS

Contact arrangement: 2 Form C (2PDT)

Contact ratings:

D-c resistive—1 amp at 28 volts

D-c inductive—0.5 amp at 28 volts (L/R not greater than 0.008)

A-c resistive—0.5 amp at 115 volts (enclosure isolated from ground, or enclosure and movable contact at same potential)

A-c—0.125 amps at 115 volts (enclosure at line potential with respect to movable contact)

Low level—suitable for low-level operation (audit testing performed at 50 millivolts, 30 microamps, 33-ohm miss level)

Contact resistance: 0.050 ohm max; 0.100 ohm during and after life test.

Life: 100,000 operations at rated loads listed; 1,000,000 operations at low-level loads.

Overload: exceeds MIL-R-5757D.

Ambient temperature: -65°C to +125°C.

Vibration: 30g, 55 to 3000 cps; 0.195-inch max excursion, 10 to 55 cps (some mounting forms derated).

Shock: 50g for 11 milliseconds, ½ sine wave.

Operate time: 4 milliseconds max, includ-

ing bounce at twice max operate volts.

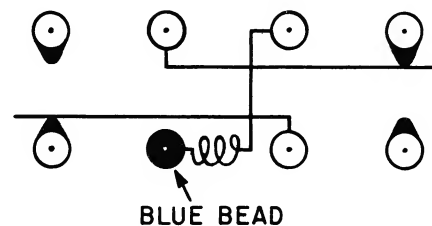
Release time: 4 milliseconds max, including bounce.

Dielectric strength: 500 volts rms at sea level; 350 volts rms at 70,000 feet and above.

Insulation resistance: 1000 megohms minimum over temperature range.

Weight: 0.13 ounce (no mount, solder hook or short pins).

CONNECTION DIAGRAM



GENERAL  **ELECTRIC**